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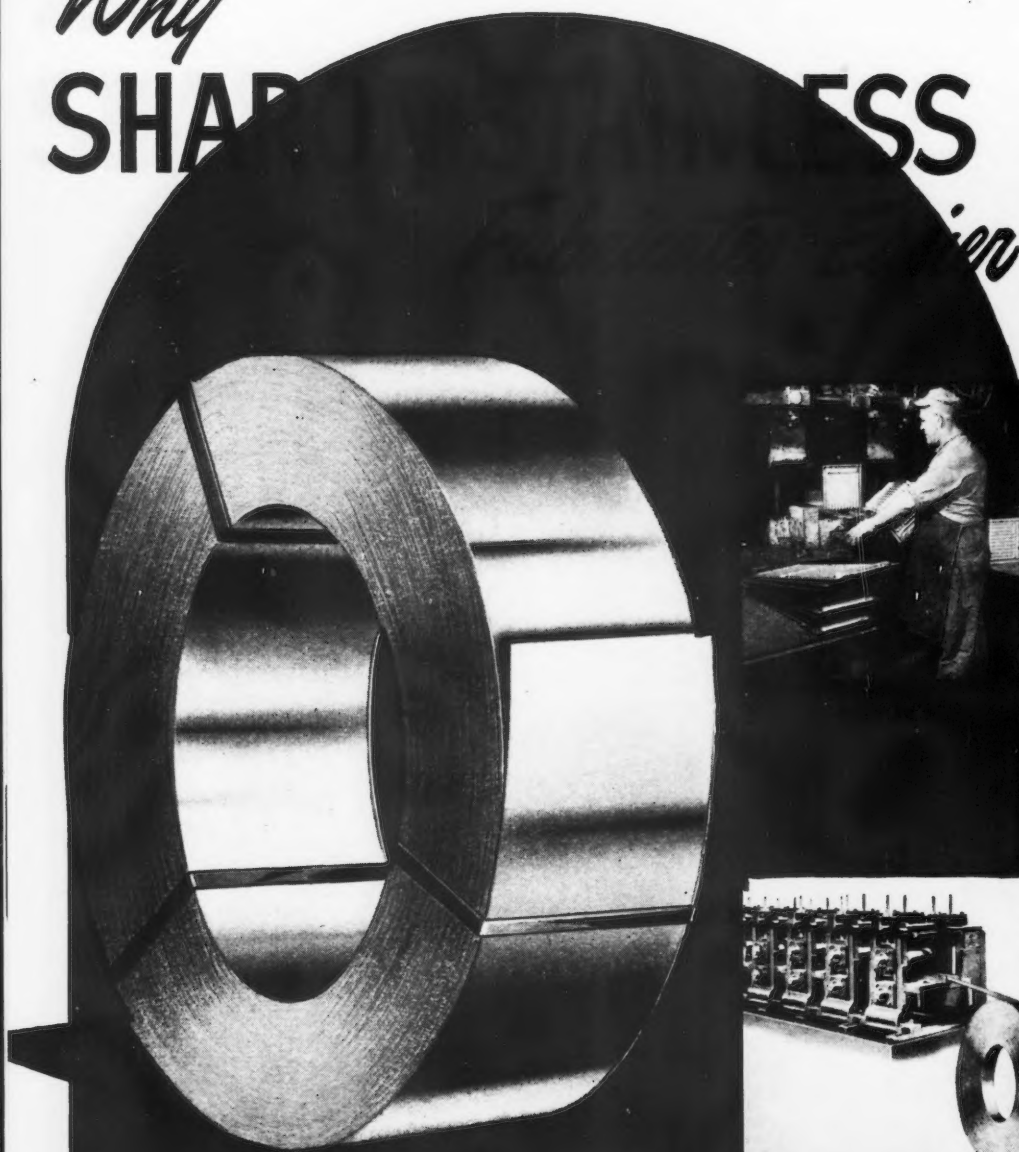
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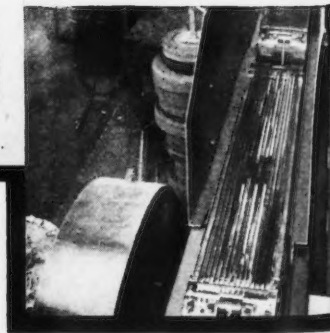
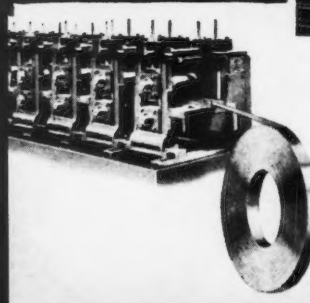
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## Ask Uncle Joe — He Knows

**U**NLESS we have a distinct change in the thinking and actions of the majority of us Americans, we are headed for trouble. Uncle Joe is smart enough to see that even if most of us are not.

Uncle Joe knows that if you put two men at each oar in an eight-oared boat, and each pulls only half as much as a single man did previously, you are not going to move the boat faster. And if you have limited provisions with which to feed them, sixteen men will eat up the food twice as fast as eight would.

Uncle Joe knows that when you have 60 million people at work as against a former top of not over 50 million, you are going to produce more goods. But if the 60 million have a 20 per cent less individual productivity than the ones who composed the 50 million, none of them will eat as well or wear more or better clothes.

Uncle Joe knows that this is what is going on in the United States. He knows that individual productivity over here has slipped tremendously since the war. And that is one reason why he expects our capitalistic system to run head on into a depression. Which it will, unless we mend our ways and really get down to work.

We have, in fact, only three choices open to us. One is to profit by experience which has demonstrated without the shadow of a doubt that our system will produce increased standards of living right down the line if we don't clamp the brakes on it. But when improved machinery is installed that is demonstrated to be able to increase hourly production 25, 50 or 100 pct, and you do not get any more per hour from it than you did from the old machines, someone is putting on the brakes.

Unless we take every opportunity to capitalize the great potential of productivity that we now have; unless we get rid of the idea that more can be had from less; unless we all get down to work, we shall have a depression when the loose folding money runs out. It won't come this year, perhaps not even in 1947, but our tactics are heading us straight toward it. Economic law has always punished its violators and it doesn't need any policemen, judges or jails to do it. It uses hunger, unemployment and bankruptcy as the corrective.

If this should come we would have two alternatives. One would be to reform and get busy, but even if we were willing to do that it would be a long hard road. The other would be to copy defeatist populations and spread the misery through state socialism. But that is a one way street from which there is no turning back. And from the experience of those who have tried it, it is a dead end street also.

I do not think that Americans want to march up a dead end street. They would not if they knew it. Somebody ought to label it and the label should be made in Washington. If the authorities there do not know what it is all about, they can ask Uncle Joe. He knows.

*J. H. Van Deventer*

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Reports of the discovery of uranium in Republic's Mexican iron ore properties has aroused considerable interest within the industry. Possibly a streak of uranium-bearing Utah carnotite may extend down into the Mexican property but small scale sampling has uncovered no significant uranium.

In any case, the Mexican Government has not yet shown any interest in the property.

Present prospects are that the British will get none of the 2 million tons of steel they are seeking in this country because American steel companies can't spare it now. If U. S. inventories are sufficiently balanced later in 1947 there may be capacity available to supply it, but commitments will not be made in advance.

Makers of paints and finishes are worried because the meat shortage has cut glycerine supply to the vanishing point. While it is known that at least one oil company has a good synthetic glycerine in the pilot plant stage, informed observers say no deliveries can be expected until late next year. Although the manufacturer's name is not revealed it is known that Shell Oil has the basic patents on the process.

Under development by one of the large aircraft companies is the first large rocket to be produced in this country from strictly American engineering and design. It is being designed for the express purpose of taking scientific instruments into the upper atmosphere. It is expected that this rocket will be approximately 40 ft long and weigh about 5 tons and will be able to carry 500 lb of instruments 120 miles above the earth.

OSRD's attempt to take the guess out of heat treating practices has resulted in observations indicating that neither temper time, temperature, rate of cooling after tempering nor the seasoning treatment have any consistent effect on tensile strength, yield point, elongation or reduction of area, except insofar as they simultaneously affected the hardness.

This study was made on six quenched and tempered steels in which tempering time, temperature, cooling rate after tempering and chemical composition were treated as variables.

A boon to gage engineers are the two slide rules developed at Frankford Arsenal to solve all of the lengthy problems and calculations involved in gage design. These rules assure the selection of proper wear allowance and gage maker's tolerance.

International Harvester solved its increased production needs not by taking over additional floor space, which itself is a headache these days, but by introducing induction soldering.

This not only reduced rejects and unit cost but enabled the company to use a prefabricated solder ring containing the exact amount of solder necessary for a perfect joint. Now no solder is wasted and the joint is reported to be always uniform.

Out of a research program undertaken by Dr. Morris Cohen of MIT has come a tensiometer capable of regulating blade tension of power hacksaws during the actual cutting operation.

This instrument, consisting of a small cylinder enclosing a strong spring, can be attached to the blade holder of a power hacksaw and can be adjusted to a tension of 0 to 400 lb. For use with the tensiometer is the Pressiometer for accurately measuring the feed pressure of the blade on the workpiece.

The next radical development in motor car heating and air conditioning may be along aircraft air conditioning lines, i.e. circulation of air through hollow walls. Automotive engineers say such a system would lick the problem of drafts.

British jet engine manufacturers are pushing export sales hard. The latest indication of this is publication of a catalog featuring two of Britain's highest powered jets, the Nene and the Derwent, in English, French and Spanish.

A British trade mission to China is flying there in two planes, one to carry the mission, the other to haul supplies to render the group virtually self-sufficient for an extensive tour of China's interior cities.

Implications of the Russian-Swedish trade pact are worrying Swedish government officials and industrialists. At present it is little more than an agreement to agree in the near future. Present indications are that the Russians want bulk carbon steel shipments, as well as heavy rolled products, including rails but Sweden is not now equipped to produce such material. This is the unknown quantity in the negotiations.

A 1/64-in. diam ball developed for wartime radar applications has possibilities for use as a bearing in peacetime precision instruments though its principal use now is in underwater fountain pens.



# Effect of Tempering On Mechanical Properties

*Directly proportional to the number of steel heat-treating shops has been the number of heat-treating practices to obtain identical results. In order to bring scientific understanding to the phenomenon of heat treating, the OSRD initiated a series of tests on six quenched and tempered steels. This extensive research has revealed some very interesting relationships between (1) brinell hardness and (2) tensile strength, yield point, elongation and reduction of area. In this, the first part of a two-part article, the authors present quantitative data to show that wide variations in tempering practice have no effect on the relationship between the above-mentioned physical properties.*

o o o

By G. K. MANNING and G. P. KRUMLAUF  
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o o o

HEAT treaters frequently have a certain freedom of choice which they may exercise in deciding tempering time and temperature to be used in meeting a hardness specification. Temper times as long as 12 to 15 hr have been used commercially to produce the same final hardness as times of, say, only 2 hr, provided the tempering temperature for the shorter time was raised perhaps 50°F. The fact that different heat-treating shops do make use of different practices in obtaining the same hardness in a given steel has led to the question of whether any advantage in mechanical properties could be assigned to a particular practice. For example, it was suggested that use of long temper times might result in superior properties because of more complete removal of quenching stresses. The OSRD study reported herein was undertaken primarily to answer this question. Tempering time, temperature, cooling rate after tempering, and chemical composition were treated as variables.

Six 500-lb heats were made in a basic-lined induction furnace and cast as 100-lb big end up, hot-topped ingots. The chemical composition, see table I, was varied as follows:

- (1) Nickel-chromium-molybdenum type with 0.40 pct Mo (10037).
- (2) Same as (1) but with only 0.20 pct Mo and with 0.003 pct B added as 11 pct ferrobore (10038).
- (3) Same as (1) but without molybdenum and with 0.003 pct B added as 11 pct ferrobore (10039).
- (4) Manganese-chromium-molybdenum type with 0.40 pct Mo (10040).
- (5) Same as (4) but with 0.20 pct Mo and 0.003 pct B added as 11 pct ferrobore (10041).
- (6) Same as (4) but without molybdenum and with 0.003 pct B added as 11 pct ferrobore (10042).

All of the heats were deoxidized with 2 lb of aluminum per ton. Two ingots from each heat were forged to approximately 1¼-in. squares and then rolled to 7/8-in. rounds, later to be machined as tensile specimens. A short section of the 1¼-in. forged stock was saved from each heat for use in determining the end-quench hardenability. Two other ingots from each heat were forged to approximately 6 x 1½-in. flats and then rolled to 9/16-in. plate to be used as stock V-notch Charpy specimens. A 9/16-in. strip was trimmed from each edge of the plate and discarded before cutting the Charpy specimens. All Charpy specimens were so cut that the length was parallel to the direction of rolling and the V-notch was perpendicular to the plate surface.

Both the bar and the plate stock from each heat

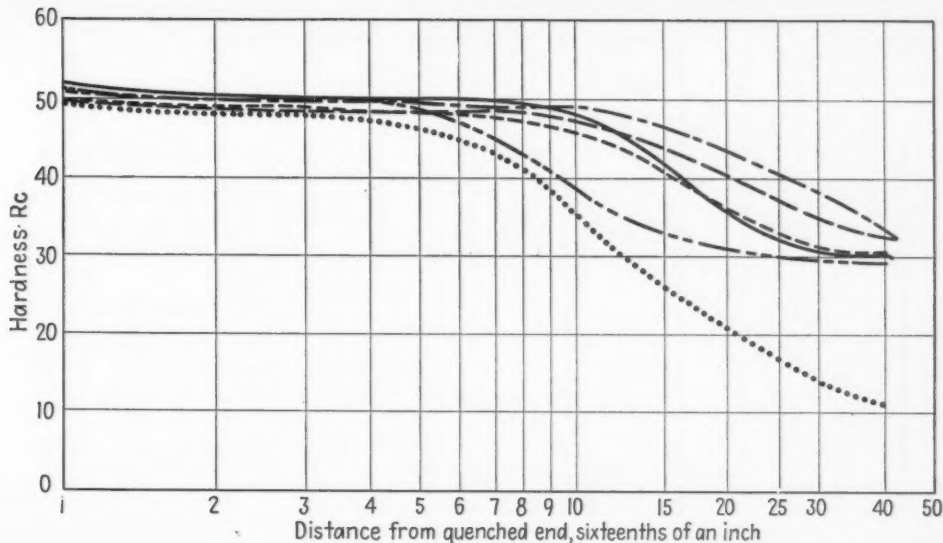
TABLE I  
Chemical Compositions of Steels Tested

Heat Number	Chemical Compositions, Percent									
	C	Mn	Si	P	S	Cr	Ni	Mo	B	Metallurgical Al
10037	0.29	0.77	0.34	0.017	0.023	0.49	0.46	0.41		0.05
10038	0.29	0.80	0.36	0.017	0.026	0.50	0.48	0.20	0.003	0.05
10039	0.30	0.80	0.35	0.015	0.026	0.50	0.50		0.003	0.05
10040	0.30	1.41	0.34	0.016	0.026	0.50		0.40		0.06
10041	0.30	1.37	0.32	0.016	0.026	0.50		0.21	0.003	0.05
10042	0.28	1.42	0.32	0.016	0.029	0.52			0.003	0.06

RIGHT  
FIG. 1—End-quench  
hardening  
curves.

BELOW  
FIG. 2—Tensile  
strength of heat  
10037 steel.

LOWER RIGHT  
FIG. 3—Tensile  
strength of heat  
10042 steel.

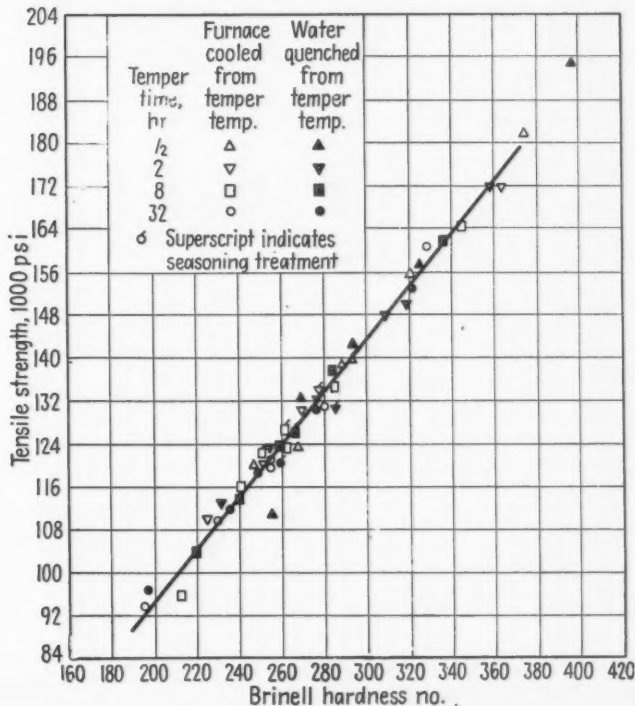
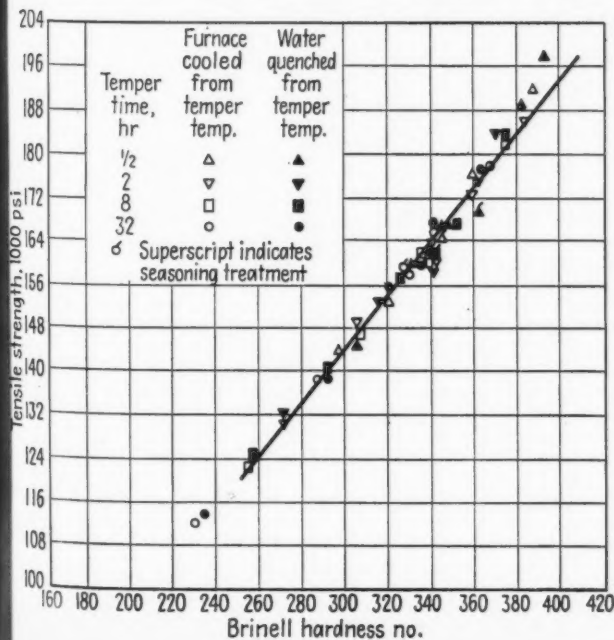


were normalized for 2 hr at 1700°F, then tempered for 1 hr at 1200°F to facilitate machining. Tensile and Charpy specimens were rough machined to 0.020 in. oversize. All tensile and Charpy specimens were heated 45 min (total time) in a furnace operating at 1600°F, water quenched, and tempered immediately. End-quenched specimens were quenched in the standard manner after 30 min in a furnace operating at 1600°F. Two sets of specimens from each heat, each set consisting of one tensile specimen and six Charpy specimens, were tempered for ½ hr at 800°F. Two additional sets were tempered 2 hr, another two sets for 8 hr, and another two for 32 hr, all at 800°F. The same procedure was followed at 900°, 1000°, 1100° and 1200°F. One set of each pair was furnace cooled from the tempering temperature to approximately 200°F; the other set was water quenched. To determine the effect of seasoning after the temper, pairs of sets were again tempered at 1000°F for ½, 2, 8, and 32 hr, respectively, one set of each pair being furnace cooled from the tempering temperature, the other water quenched. Both sets were then seasoned for 24 hr at 400°F. These treatments resulted, altogether, in 288

Key	Heat No.	C	Mn	Si	S	P	Cr	Ni	Mo	Al	B	Quench temp.
-----	10037	0.29	0.77	0.34	0.23	0.17	0.49	0.46	0.41	0.05	—	1600
-----	10038	0.29	0.80	0.36	0.26	0.17	0.50	0.48	0.20	0.05	0.003	"
.....	10039	0.30	0.80	0.35	0.26	0.15	0.50	0.50	—	0.05	0.003	"
-----	10040	0.30	1.41	0.34	0.26	0.16	0.50	—	0.40	0.06	—	"
-----	10041	0.30	1.37	0.32	0.26	0.16	0.50	—	0.21	0.05	0.003	"
-----	10042	0.28	1.42	0.32	0.29	0.16	0.52	—	—	0.06	0.003	"

tensile specimens and 1728 V-notch Charpy specimens.

After the heat treatment was complete, both tensile and Charpy specimens were ground to final size. Two Charpy specimens from each set were broken at room temperature, -40°F, and at -80°F. Cooling of the Charpy specimens was done in an acetone-dry ice bath. Specimens to be broken at -40°F were undercooled 3°F, and specimens to be broken at -80°F were undercooled 5°F, previous work having indicated that this amount of undercooling was approximately equivalent to the



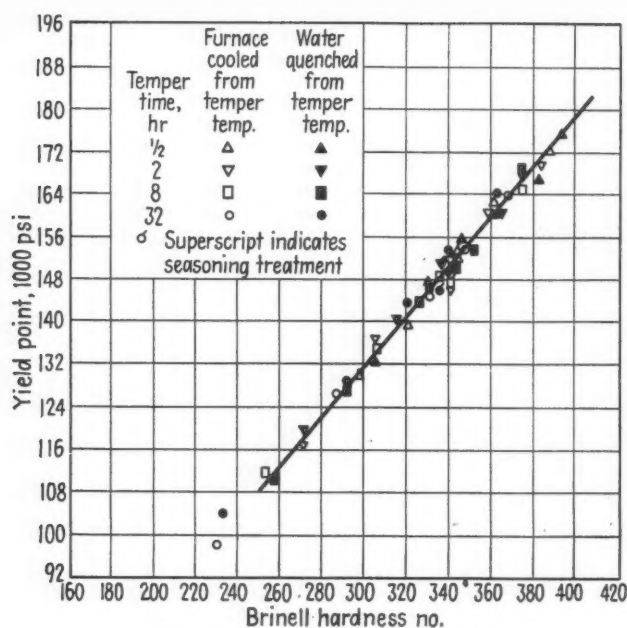


FIG. 4—Yield point of heat 10037 steel.

temperature rise that occurred in the specimens during the 5 sec needed to adjust the specimens in the impact machine. Values for V-notch Charpy specimens are the average of two duplicate specimens, while values for tensile strength, yield point, elongation and reduction of area are the result of single tests.

Brinell hardness values were made on one end of the broken tensile specimens after grinding an appropriate flat area on the threaded section. Brinell impressions were also made on the Charpy specimens of heat 10039. When it was found that the hardness obtained on the Charpy specimens did not differ significantly from the hardness obtained on the tensile specimens and that the scatter obtained on the Charpy values versus brinell hardness plots was not improved by taking the hardness directly from the Charpy specimens, the practice of making brinell hardness impressions on the Charpy specimens was discontinued, and the hardness values obtained on the tensile specimens were used as the hardness of the similarly treated Charpy specimens. Since both tensile and Charpy specimens receiving the same temper treatment were processed in the same furnace at the same

TABLE II

Average Deviations from "Lines of Regression"

Values listed express deviations from average values and have been calculated by the method of least squares. The minus sign indicates values falling below the average; omission of plus sign indicates values above the average.

Heat Number	Specimens Quenched After Temper						Specimens Furnace Cooled After Temper					
	10037	10038	10039	10040	10041	10042	10037	10038	10039	10040	10041	10042
Tensile Strength in 1000 Psi												
Effect of temper time												
0.5 hr.	1.6	1.4	1.0	1.8	4.2	0	0.6	0.2	1.0	1.2	-0.2	0.8
2.0 hr.	0.4	1.8	1.2	-4.6	0.2	0.2	-0.6	-0.8	0.7	-0.6	-1.2	0.4
8.0 hr.	0.4	-1.2	0.2	2.0	-1.0	0.6	-0.3	0.8	-1.0	0.4	-0.4	-1.2
32.0 hr.	0.8	-0.2	-1.5	2.0	-1.8	0.4	-0.4	0.8	1.0	0.2	-0.6	0.2
Effect of tempering temperature												
800°F.	4.0	2.0	1.5	3.8	2.0	0.5	1.0	1.3	1.7	2.3	1.0	0.5
900°F.	0	-1.0	-0.5	1.8	-1.0	0	-0.3	-0.5	-0.3	-0.8	2.8	-0.3
1000°F.	-0.5	-1.0	-0.8	-2.2	0	0.8	-2.0	0.3	0	-0.5	-1.3	0
1100°F.	-0.3	0.3	0.8	-2.0	-0.5	1.3	-0.3	-0.3	1.0	-1.0	-1.0	0
1200°F.	0.8	2.0	0	0.3	1.5	-1.0	0.3	0.5	...	1.5	1.3	0
Yield Point in 1000 Psi												
Effect of temper time												
0.5 hr.	-0.4	0.2	-1.2	-1.0	2.4	-0.4	-0.2	0.6	1.8	0	-1.0	0
2.0 hr.	0.6	2.6	-1.8	-5.2	0	-1.6	-0.4	-0.4	2.5	-2.2	-0.2	0.4
8.0 hr.	0.2	-2.2	0.8	0	-1.0	0.2	0.5	0.2	-1.7	-0.6	0.2	-1.6
32.0 hr.	2.0	-0.6	0.5	0.4	-3.2	0.6	0.4	-0.7	1.0	-1.0	0	0.8
Effect of tempering temperature												
800°F.	1.3	-0.8	-0.5	-1.5	-0.8	-1.3	-1.0	-1.0	2.0	-1.0	0.3	-1.0
900°F.	-1.3	-1.0	1.0	0.5	-0.3	0.3	1.3	1.5	2.0	0	-1.3	1.0
1000°F.	1.0	0.5	-0.5	-2.0	0.3	0.8	-0.8	1.3	1.3	-0.3	-0.3	1.3
1100°F.	1.0	1.5	-0.5	-2.8	-1.3	0.8	0.8	-2.0	-0.8	-2.8	-1.3	-1.3
1200°F.	1.0	-0.3	-2.5	-1.5	-0.3	-2.0	0.3	0	...	-0.8	1.3	-0.5
Elongation in Percent												
Effect of temper time												
0.5 hr.	0.4	-0.1	0.1	-0.3	-1.2	-0.6	-0.4	0.3	0.2	0.5	0.1	0
2.0 hr.	0.4	0.4	0.8	0.8	0	0.5	0	0.3	-0.4	-0.4	0.7	0.1
8.0 hr.	-0.5	0.1	0.1	-0.1	-0.2	-0.1	-0.2	0.1	-0.3	0.1	0.1	-0.2
32.0 hr.	0.2	0.4	0	0	0.8	-0.3	0.1	-0.1	0	0.3	0	-0.3
Effect of tempering temperature												
800°F.	0	0.5	0.8	0.8	0.5	1.1	-0.1	0.1	0.5	0	0.6	0.6
900°F.	0.1	0.5	-0.8	0.1	0.5	-0.5	0	-0.3	-1.0	-0.5	0	-1.4
1000°F.	0.1	-0.3	0.8	-0.1	-1.3	-1.5	0.1	0.3	-0.5	0.1	-0.1	-0.1
1100°F.	0.2	-0.1	0.4	-0.1	-0.1	-0.4	-0.1	0.3	0.8	0.6	0.1	-0.3
1200°F.	0.1	0.4	1.0	-0.1	0.5	0.6	-0.5	0.4	...	0.4	0.3	0.6
Reduction of Area in Percent												
Effect of temper time												
0.5 hr.	2.1	-0.3	1.4	1.7	1.7	2.4	1.5	2.3	0.1	1.9	0.6	-2.4
2.0 hr.	1.5	0.2	1.4	2.3	-0.2	0	-0.4	2.2	-0.9	-0.3	-0.5	0.9
8.0 hr.	-1.1	-0.6	-0.1	0	0.1	-0.1	-2.0	-1.0	-0.3	-1.1	0.9	-1.1
32.0 hr.	-0.3	-1.0	-0.2	-0.5	1.0	-0.8	-1.8	-2.8	0	-2.1	-2.2	0.6
Effect of tempering temperature												
800°F.	0.4	-1.8	0.1	0.5	-0.6	1.0	-1.9	0.5	-0.3	-1.5	0.8	0.3
900°F.	-1.4	-1.8	-0.6	-0.5	1.9	-1.6	-0.7	-0.1	0.3	0.5	-1.0	-2.4
1000°F.	0.5	1.1	-0.3	0.4	-0.6	-0.3	-0.8	-0.4	-0.6	-0.9	-0.3	0.8
1100°F.	2.1	1.1	1.6	1.4	-0.1	-0.5	0	0.8	-0.5	1.0	-0.5	-0.8
1200°F.	1.1	-0.9	2.8	2.6	2.6	3.3	0.3	0.1	...	-1.1	-0.5	-0.4



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time, there was no reason for expecting a significant difference in hardness between them.

The hardenability results shown in fig. 1 indicate that all six heats had ample hardenability to insure full hardening of the tensile and Charpy specimens. In the case of the nickel-chromium-molybdenum series, it may be noted that an addition of 0.003 pct B was capable of more than offsetting a drop of 0.20 pct Mo, but was not capable of fully replacing 0.40 pct Mo. The same effect was not observed in the manganese-chromium-molybdenum series. In the manganese-chromium-molybdenum series, the hardenability decreased slightly with decrease in molybdenum content, in spite of the boron addition. Variation in boron recovery does not explain the difference in behavior of the two series, since chemical analysis indicated practically 100 pct recovery of boron in every steel to which it was added. Variation in the recovery of other elements also appears to be too small to affect the hardenability measurably.

#### Method of Plotting Data

Janitzky and Baeyertz<sup>1</sup> and others have noted the very close relationship that exists between brinell hardness, tensile strength, yield point, elongation and reduction of area when a variety of steels is tested in the fully quenched and tempered condition. Such a relationship merely indicates that brinell hardness, tensile strength, yield point, elongation and reduction of area are, for the most part, only different methods of measuring the same characteristic of steel. However, this inter-relationship can be put to excellent use in interpreting mechanical test data if one of the tests is treated as an independent variable and the results of the other tests plotted against this chosen independent

<sup>1</sup> Janitzky, E. J., and M. Baeyertz, "The Marked Similarity of Properties of Several Heat Treated S.A.E. Steels" ASM Handbook, 1939, p. 515.

variable. It has been long recognized that improved elongation and reduction of area may be realized, provided one is willing to lower the hardness, tensile strength and yield point. Such simple improvements in one property by a particular treatment without any reference to the effect on other properties are of little interest. Any real improvement must be a matter of increasing some one property without sacrificing other properties. It must be a matter of obtaining "something for nothing" in terms of mechanical properties. If four of the properties are plotted against the fifth, each plot representing a number of different treatments, examples of any real improvement will immediately attract attention as being points which deviate from the general locus of points on the graph.

Brinell hardness has been used as the independent variable in plotting the data, because brinell hardness is the simplest and most commonly used mechanical test. In the course of the work, it was found that a definite relationship often existed between the notch-bar strength and brinell hardness, particularly with certain steels. Therefore, it seemed appropriate to plot the V-notch Charpy test results in the same manner. The best linear representation of each property as a function of hardness was determined by the method of least squares and has been superimposed on the data plots as a line. Such "lines of regression" serve two purposes; (1) a comparison of the lines representing the same properties of different heats will

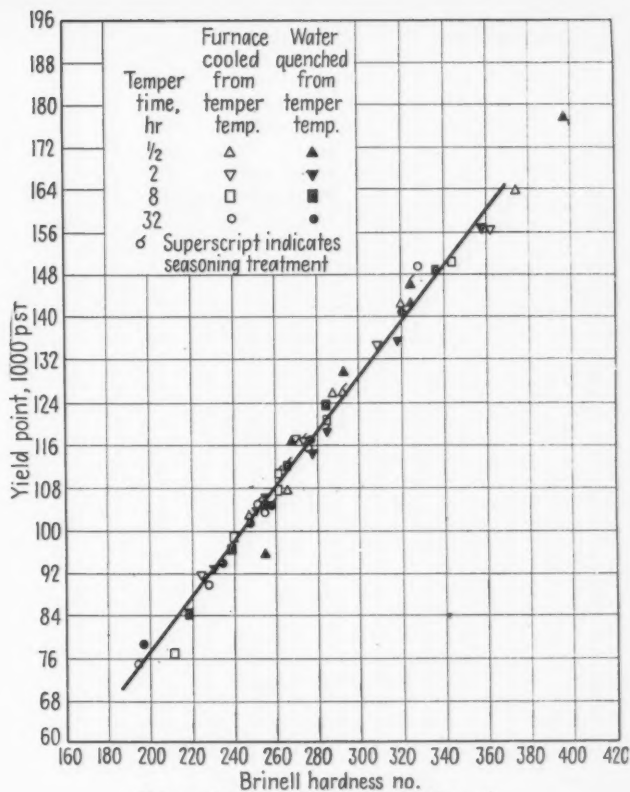


FIG. 5—Yield point of heat 10042 steel.

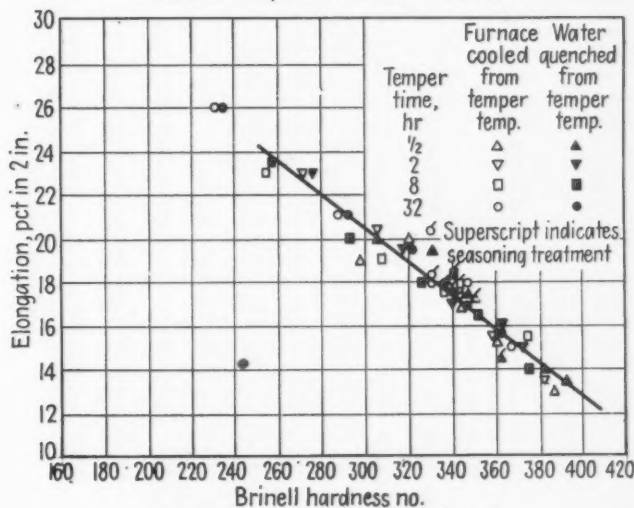


FIG. 6—Elongation of heat 10037 steel.

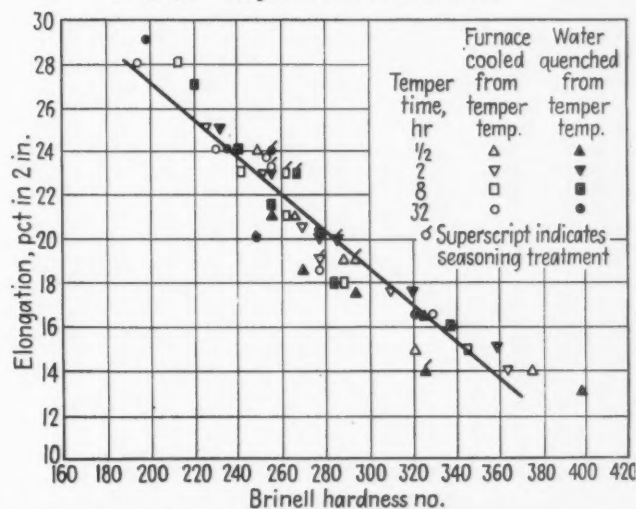


FIG. 7—Elongation of heat 10042 steel.

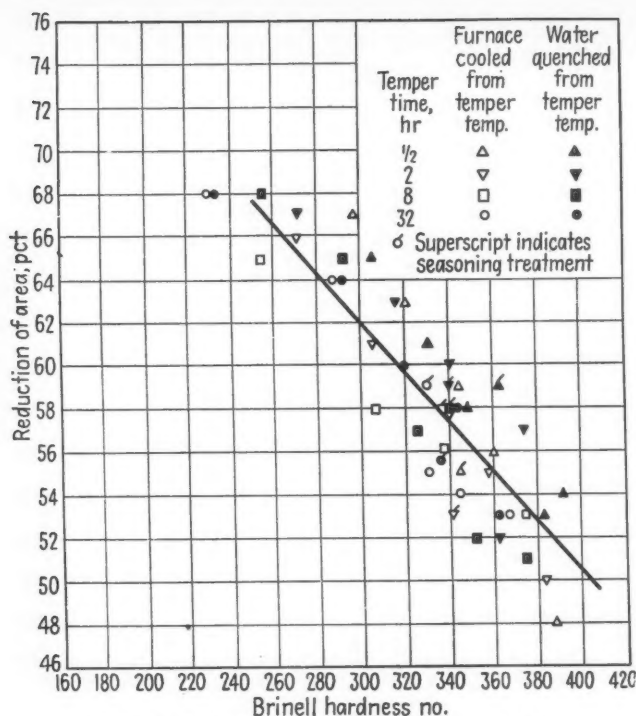


FIG. 8—Reduction of area of heat 10037 steel.

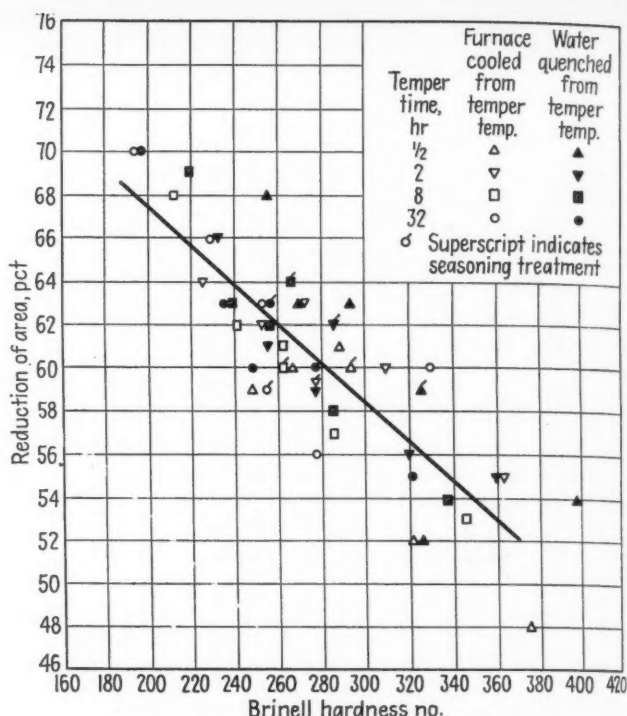


FIG. 9—Reduction of area of heat 10042 steel.

indicate the effect of composition, and (2) the lines may be used as references for comparing the deviations associated with particular temper practices.

### Physical Properties

Neither temper time, temperature, rate of cooling after tempering, nor the seasoning treatment had any

consistent effect on tensile strength, yield point, elongation or reduction of area, except insofar as they simultaneously affected the hardness. Figs. 2 through 9 show the data plots of tensile properties for heats 10037 and 10042. These provide a basis for visualizing the degree of correlation that was obtained. Space limitations have not permitted reproduction of the data plots for all six heats.<sup>2</sup> Heat 10037 exhibited, on the whole, the best correlation, and heat 10042 exhibited the poorest. The other four heats were intermediate between these extremes. If temper time, temperature, rate of cooling, or the seasoning treatment had some particular power to affect any one of the properties without causing a corresponding change in hardness, certain symbols would stand out on some plots as falling consistently above or below the line of regression. Instead, the various kinds of symbols were distributed more or less at random about the lines of regression. The same lack of effect may be shown in tabular form by averaging the vertical deviations of the points from the line for different groups of symbols. This is done in table II. The variations in average deviations that do exist are too small to be significant and, furthermore, exhibit no consistent trend. Greaves and Jones<sup>3</sup> have suggested that quenching from the tempering temperature results in a lowering of the elastic limit by increasing the residual stress. No such effect on the yield point was observed in any specimens of this study. The distribution of minus yield point deviations in table II is random and not confined to the fast-cooled specimens, as would be the case if quenching from the tempering temperature produced an appreciable decrease in yield point. It is concluded that,

TABLE III

Correlation Coefficients and Standard Errors of Estimate for Various Physical Properties of All Six Heats

Heat Number	Correlation Coefficients*			
	Tensile Strength	Yield Point	Elongation	Reduction of Area
10037	0.992	0.994	-0.933	-0.830
10038	0.991	0.991	-0.982	-0.837
10039	0.988	0.988	-0.939	-0.830
10040	0.984	0.988	-0.955	-0.879
10041	0.990	0.992	-0.944	-0.847
10042	0.993	0.993	-0.947	-0.853
Heat Number	Standard Errors of Estimate**			
	Tensile Strength, 1000 Psi	Yield Point, 1000 Psi	Elongation, Pct	Reduction of Area, Pct
10037	2.41	1.93	0.562	3.06
10038	2.55	2.58	0.569	2.79
10039	2.97	3.15	1.211	1.63
10040	3.98	3.18	0.962	2.39
10041	3.13	2.73	1.103	2.40
10042	2.61	2.91	1.287	2.50

\* The correlation coefficient is a measure of the extent to which the various properties are linearly related to the Brinell hardness. A correlation coefficient of either  $\pm 1$  indicates complete correlation. A correlation coefficient of 0 indicates complete lack of correlation.

\*\* From a purely statistical viewpoint, the chances are two in three that observed values will not deviate more than one standard error from the plotted line, and 95 in 100 that observed values will not deviate more than two standard errors from the plotted line.

<sup>2</sup> Complete data are available in OSRD Report 3423, Serial M-245, dated Mar. 30, 1944.

<sup>3</sup> Greaves R. H., and J. A. Jones, "Susceptibility to Temper Brittleness in Relation to Chemical Composition," *Journal Iron & Steel Institute*, 3, 1925, pp. 231-255.

in the case of 0.30 pct C steels, it matters very little how temper time and temperature are juggled in ob-



taining a certain hardness—whether the specimens are slowly or rapidly cooled from the tempering temperature, or whether or not a subsequent seasoning treatment at 400°F is used—as far as tensile strength, yield point, elongation or reduction of area are concerned.

Since temper practice has no effect on the relationship between brinell hardness and either tensile strength, yield point, elongation or reduction of area, all the data may be used in considering the degree of correlation that is obtained. Examination of the data plots indicated that an excellent correlation existed between tensile strength, yield point, and elongation and the brinell hardness, and that, though the scatter on the reduction of area plots was considerably greater, the correlation is still fairly good. The importance or closeness of the relation is expressed mathematically by the coefficient of correlation, whereas the reliability of the line of regression (as a means of predicting values of the various properties from the hardness) is given by the standard error of estimate. Both the correlation coefficient and the standard errors of estimate are tabulated in table III.

The accuracy in determining the brinell hardness is probably not better than  $\pm 5$  Bhn points, and this error alone may be sufficient to account for most of the scatter which occurs in the plots for tensile strength, yield point and elongation. If it were possible to determine more accurately the brinell hardness, it might be that the correlation would become very precise—that the standard error of estimate would approach 0 and the correlation coefficient would approach 1. As it is, the data of table III indicate that it should be possible to predict the tensile strength from the brinell hardness to within 5000 to 8000 psi, depending on the steel, 95 times out of 100. Similarly, it should be possible to predict the yield point to within 4000 to 6000 psi, the elongation to within 1.2 to 2.5 pct, and the reduction of area to within 3 to 6 pct. Such predictions would, of course, presuppose fully hardened 0.30 pct C steels of the types tested, tempered to within the range of about 200 to 400 Bhn.

The variations in standard errors of estimate and correlation coefficients that exist between different heats probably are not significant. It will be noted again from table III that such variations are not consistent between nickel-chromium-molybdenum and the manganese-chromium-molybdenum steels. The outstandingly small standard error of estimate for reduction of area on heat 10039 can be explained on a different basis and is discussed later.

Figs. 10, 11, 12 and 13 show the six lines of regression for each property on separate plots. It may be seen that the six lines for tensile strength fall within an extremely narrow band. Thus, it may be said that changes of composition within the range studied have no effect on the brinell-tensile relationship. On the contrary, the lines for yield point, elongation and reduction of area appear to deviate considerably from one another. From figs. 11, 12 and 13 it may be noted that the lines for heats 10037 and 10040 (both 0.40 pct Mo heats) are consistently above the lines for other heats, indicating slightly superior properties for these heats at any given hardness. Individually, the improvement of any particular property is scarcely sufficient to be regarded as significant. However, since the effect is consistent for the different properties, and since the effect appears to parallel certain findings for the Charpy values later discussed, it is thought to be real and not merely a matter of chance. The superi-

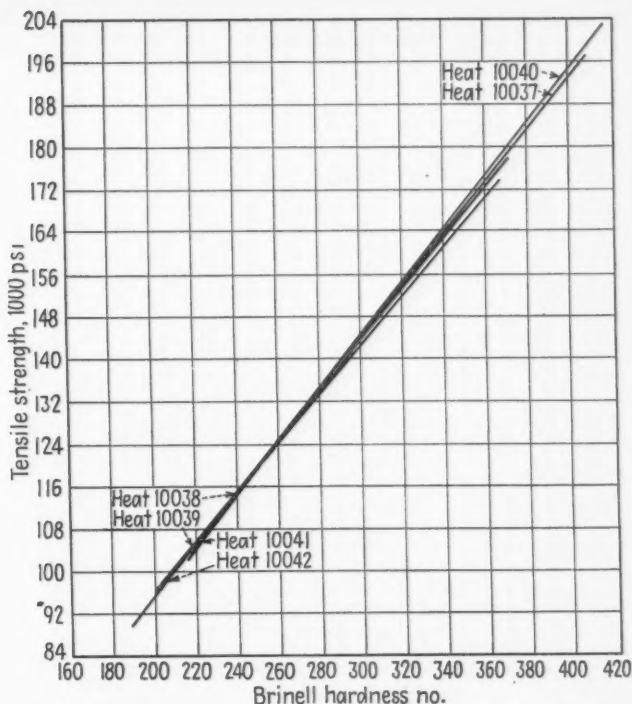
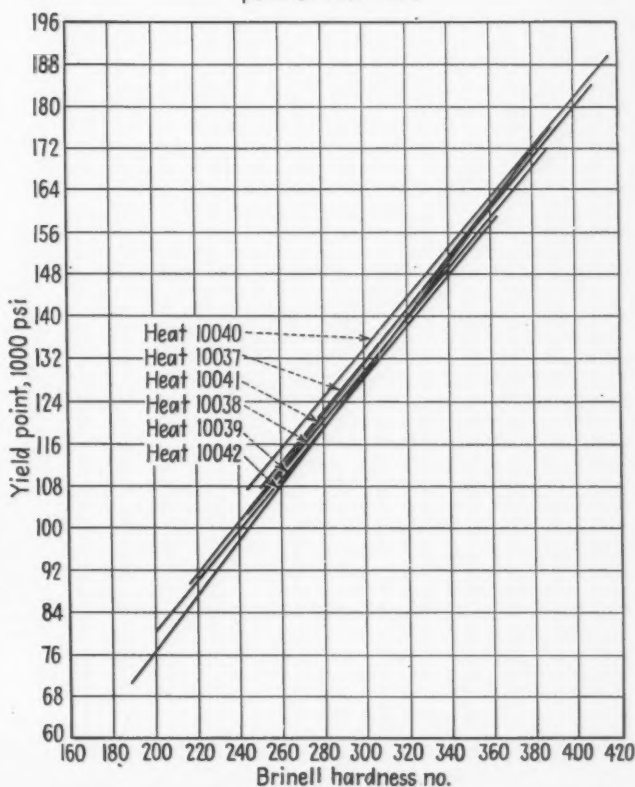


FIG. 10—Comparison of the "lines of regression" for the tensile strength of each heat.

ority of heats 10037 and 10040 in yield point, elongation and reduction of area is attributed largely to the greater molybdenum content of these heats and not to some possible detrimental effect of boron present in the other four heats. It may be noted that the lines of regression tend to be progressively lowered as the molybdenum content is lowered from 0.40 to 0.20 to 0

FIG. 11—Comparison of the "lines of regression" for the yield point of each heat.





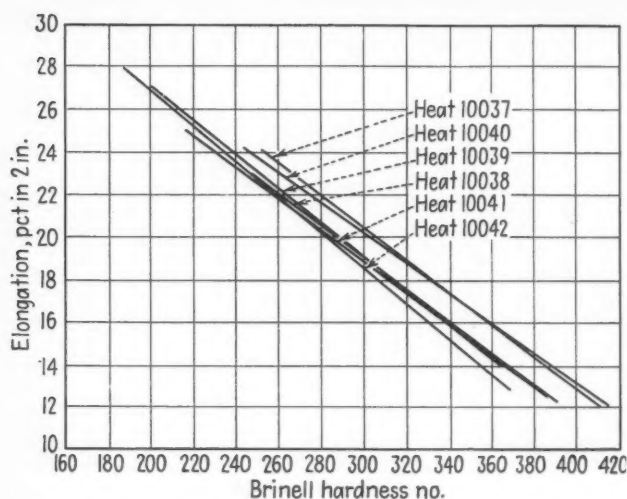


FIG. 12—Comparison of the "lines of regression" for the elongation of each heat.

pct. If boron were largely responsible for the differences, one would expect a sharp difference between heats 10037 and 10040 and the other four, but the lat-

*In the second part of this article the authors will show the relationship between Charpy impact values and brinell hardness, tested at room temperature—40°F and —80°.*

ter four, all made with the same boron addition, would be equivalent. This argument is strengthened, subsequently, by the results from the Charpy tests.

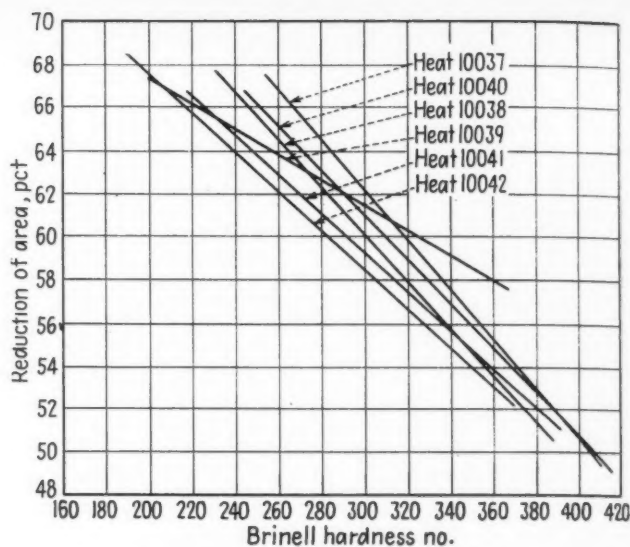


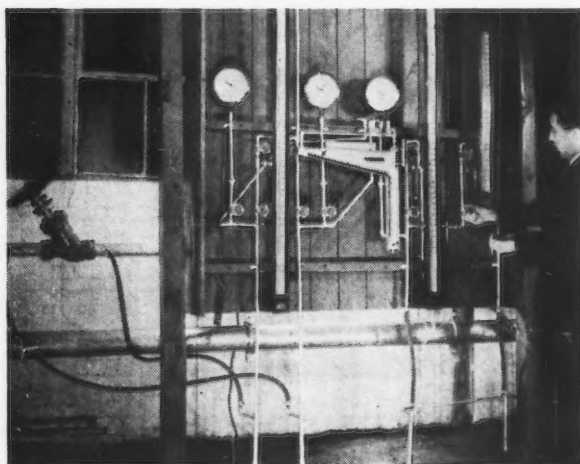
FIG. 13—Comparison of the "lines of regression" for the reduction of area of each heat.

A pronounced difference in slope of the line of regression for heat 10039 is evident in fig. 13. The number of tests from which this line was calculated was smaller than the number of tests used in calculating the line of other heats because of an error in handling. Because of this, the range in hardness covered by the tests was reduced. The omission of these points is thought to be responsible for the obvious change in slope and for the smaller than usual standard error of estimate.

## Pressure Losses in Pipe Fittings Studied

AN original test hook-up, described by the company as the only one of its kind in existence, has been constructed by the laboratories of Edward Valves, Inc., East Chicago, Ind., for the computation of pressure

TYPICAL of the tests currently being held at the Edward Valve laboratory is this view of the set-up used to record pressure losses through a globe valve.



losses through valves and piping. The equipment was designed and fabricated after several years of study. Provision is made for tests of all types of standard valves.

Readings are made on flow meters, manometers and gages, and are tabulated for specific operating conditions, as shown in the accompanying illustration. From these readings, accurate computations of pressure loss for valves of known characteristics are possible for all normal service conditions. The experimental work on pressure loss is projected as a permanent and continuous activity of the Edward laboratories. E. B. Pool, research engineer, directs the section of the laboratory staff assigned to the project.

## Permanent Mold Bibliography

A BIBLIOGRAPHY of 118 references covering permanent molds has been compiled by H. E. Bourassa, permanent mold Metallurgist, Castalloy Co., Inc., 363 Third St., Cambridge Mass. This compilation covers the period from 1921 to 1946 and contains an article index as well as a chronological index. THE IRON AGE Reader Service Dept. has prepared copies of this bibliography which are available to readers gratis, while the supply lasts.

## Special Racks Handle Heavy Material Economically

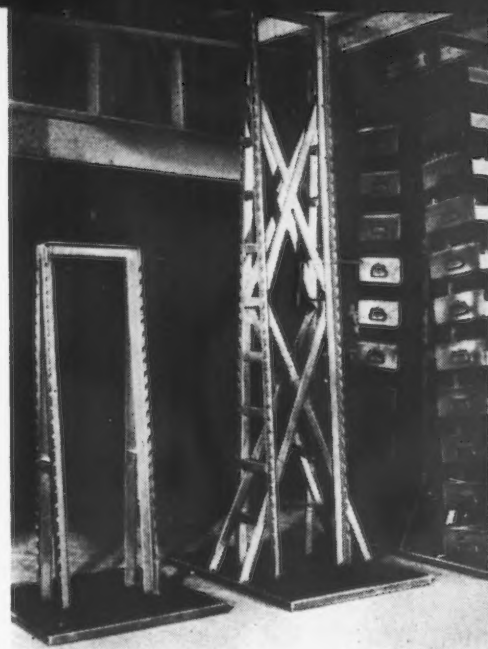
POSTWAR competition is causing many metal-working plants to resurvey material handling methods in an effort to lower costs. The potentialities of such surveys in improving handling methods and lowering handling costs is illustrated by the recent experience of one plant, as reported by Rack Engineering Co., Pittsburgh, builders of material handling equipment.

The material handling problems facing this plant were: What to do with heavy material scattered over a large amount of valuable floor space because they were too heavy to store on shelves? Other materials, lighter in weight, were stored on shelves where they were reached through the use of ladders.

The first step recommended in overcoming these high-cost methods was the installation of banks of Rack designed ceiling high station racks, as shown in fig. 1, equipped with removable master trays of sizes and types designed to conform with the material handled. Since it was not planned to handle these trays manually, it was possible to load each to its capacity of 300 lb. The total load carried on the trays on a single rack added up to two tons. The bank of trays on the rack represents a working surface of more than 70 sq ft, while the rack itself requires but 10 sq ft of floor space.

A subsequent problem was to institute an efficient method for placing or removing the loaded trays as needed without excessive use of manual labor and ladders. This difficulty was solved by employing an industrial lift truck. The truck easily and speedily selects any desired tray from the lower to the uppermost reaches of the rack with a minimum of physical

FIG. 1 — Ceiling high station racks such as shown here give 70 sq ft of working surface while taking up only 10 sq ft of floor space.



effort on the part of the operator, as shown in fig. 2. The manual labor of the workers in the department was greatly lightened with a resultant increase in efficiency.

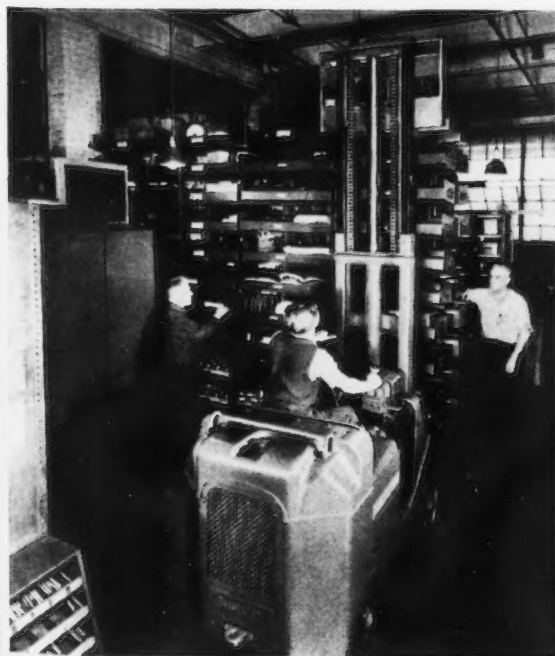
The problem of moving requisitioned materials in either selected quantities or bulk lots was solved by employing rack-conveyors. This unit, equipped with 12 roller bearing steel wheels of a swivel arrangement is easily maneuvered about a plant floor when loaded to a capacity of one ton. A lift truck is able to remove desired trays from the ceiling rack and place them on the rack-conveyor for shipment to operational points. Where the distance is great one or more of the conveyors are picked up by a fork-truck, fig. 3, and speedily dispatched to their destinations. Upon arrival they are easily moved to within arm's length of the operator permitting him to select desired material with a negligible time loss and a minimum of physical effort.

LEFT

FIG. 2—Industrial lift trucks make it possible to load and unload with ease heavy trays from the rack. Trays may thus be loaded to 300 lb each, a weight beyond normal manual handling.

BELOW

FIG. 3—Rack conveyors equipped with roller bearing wheels can be quickly moved to assembly points by lift trucks, with final placement of the racks made by moving them on the steel wheels to within arm's reach of the operator.



# Special Slide Rule Solves Gage Design Problems

By B. B. PATTON

Chief Engineer, Gage Laboratory, Frankford Arsenal

**All of the lengthy problems and calculations involved in gage design can be solved by the use of a special type of slide rule calculator recently designed for the use of gage engineers at Frankford Arsenal. A description of this rule and practical examples of its use are given herein.**

MASS production of component parts in industry makes the use of gages necessary in order to insure interchangeability of parts, quick assembly, and high quality of the final product. In the design of inspection gages, two major problems dealing with tolerancing must be considered. These are wear allowances and gage maker's tolerance.

Wear allowance is of vital importance, unless wear resisting materials such as carbides, or synthetic sapphires are used, as through this medium the life of the gage must be prolonged and at the same time the taking of an appreciable amount of the component tolerance from the manufacturer must be avoided. The proper selection of wear allowance directly affects the cost of the product.

The second major factor is the gage maker's toler-

ance. This is obviously necessary in order that the gage maker may have a working tolerance when producing the gage. The amount of tolerance must be carefully selected to insure feasibility of manufacturing the gage without undue cost.

In order to accomplish these objectives, two gage engineers' slide rules were developed at Frankford Arsenal which are applicable to all standard types of gages. The tolerances have been mathematically computed and cover a complete range of sizes and component tolerances. In using these slide rules proper selection of wear allowance and gage maker's tolerance is assured.

To illustrate the use of the gage engineer's slide rule, the coupling shown in fig. 1 may be used as an example. Gages must be designed to control the various dimensions within the specified tolerances.

The first dimension under consideration will be the total length (1.50-0.01). For purposes of illustration, this function will be checked by a built-up snap gage shown in fig. 2. Using the side of the slide rule shown in fig. 3, the proper instructions are found under the title "Plain Ring and Snap Gages." By adjusting the slide to the left so that the component tolerance 0.01 appears in the window titled "Component Tolerance"

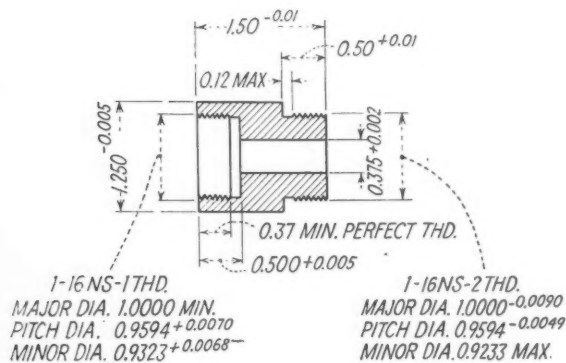


FIG. 1—Production drawing of a steel coupling used as an example. The gages described in this article are dimensioned for use on this part.

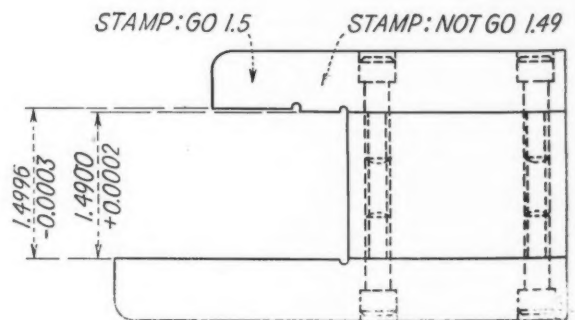


FIG. 2—Conventional type of built-up snap gage to be used for checking the overall length of the coupling.



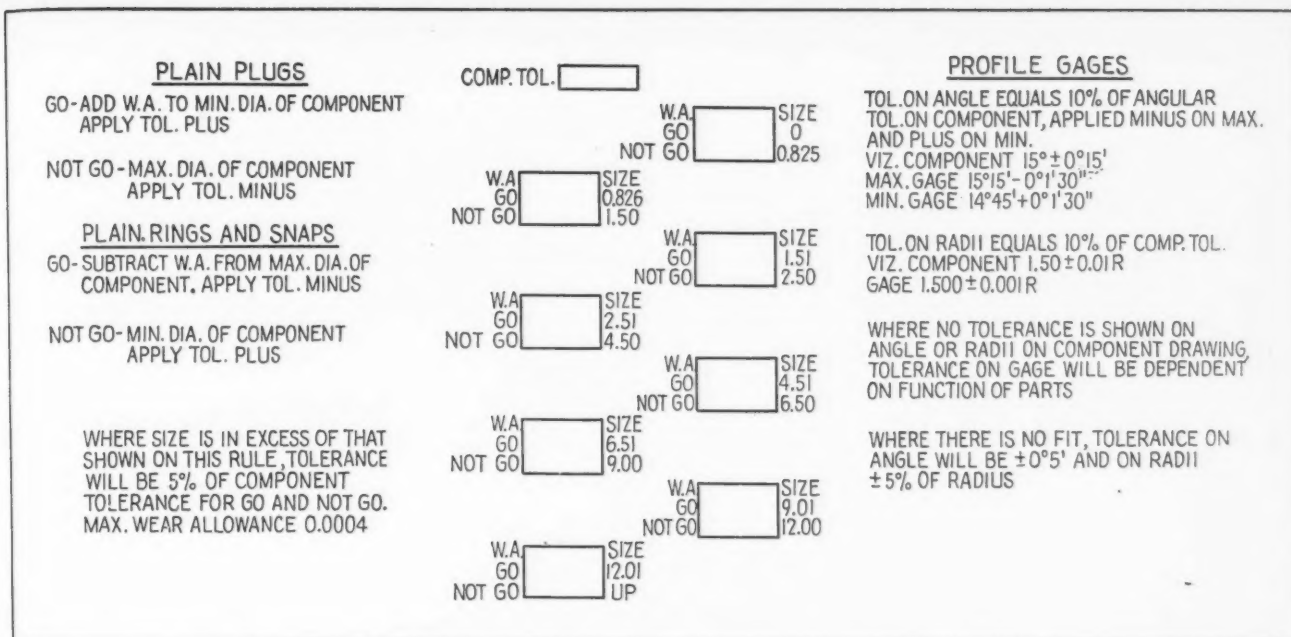


FIG. 3—Simulated face of the slide rule used for establishing wear allowance and go and not go limits for plain gages.

(indicated as "Comp. Tol." in fig. 3) and referring to the first block under and to the left of the component tolerance rectangle which applies to any component size from 0.826 to 1.50, the given wear allowance (0.0004), the tolerances for the go gage (0.0003) and for the not go gage (0.0002) will be found. Applying the rule stated under "Plain Rings and Snaps" produces 1.5000 maximum length of component  $-0.0004$  wear allowance, giving a go size of 1.4996 with a tolerance of  $-0.0003$ ; and the not go size of  $1.4900 + 0.0002$ .

It will be noted that the wear allowance and tolerance on the go gage consumes a maximum of 7 pct of the component tolerance. The tolerance on the not go gage consumes a maximum of 2 pct of the component tolerance. It will also be noted that both tolerance and wear allowance are inside the component limits which is the practice of the Ordnance Dept., assuring acceptance of only those parts which are inside the component drawing limits.

The outside diameter of the coupling (1.25-0.005), can be checked with an adjustable snap gage. For this type of gage the opposite side of the slide rule is used. The slide is moved to the right until 0.005 appears in the component window, the proper tolerance of 0.0002 for both go and not go dimensions will then be found. The go gage dimension, therefore, will be  $1.2500 - 0.0002$ , and the not go dimension will be  $1.2450 + 0.0002$ . It is not customary to provide any wear allowance for adjustable gages, as the amount of wear is negligible and can be compensated for by adjustment.

The third dimension to be gaged is the center hole ( $0.375 + 0.002$ ). This can be gaged with either a double ended or progressive plug gage. In this case, the same side of the slide rule is used as for the total length gage. The slide is moved to the right until 0.002 appears in the component tolerance window, using the block applicable to a size from 0 to 0.825. The go plug gage will then be dimensioned  $0.3750 + 0.0001$  by adding the wear allowance of 0.0001 and applying a tolerance of 0.0001. The not go end of the gage will be

$0.3770 - 0.0001$ , which is the maximum diameter of the hole with  $-0.0001$  for the gage maker's tolerance. The length to shoulder ( $0.50 + 0.01$ ) and the depth of the threaded cavity ( $0.500 + 0.05$ ) can be checked with sheet length gages or flush pin gages which use the same side of the slide rule as the adjustable snap gage.

For designing thread gages, a separate slide rule for national special threads is used. One side of this rule, shown in fig. 4, covers threaded plug gages, while the reverse side is used for threaded ring gages.

In checking the 1 in.-16 NS-1 internal thread, the side of the rule shown in fig. 4, is used. The slide is moved to the right until 16 threads per in. appear in the window titled "T.P.I." Without further moving the slide, all the information needed to design the go and not go thread plug gages may be ascertained. The go thread plug will have the following dimensions by following the instructions in the left hand side of the rule. The major diameter 1 in.  $+ 0.0006$ ; dimension 1 in. being the basic major diameter of the component and the gage maker's tolerance of  $+ 0.0006$  obtained from window J, which is applicable to any major diameter up to 4 in.

Pitch diameter of  $0.9596 + 0.0004$ ; dimension 0.9596 is obtained by adding 0.0002 wear allowance obtained from window titled W.A. and gage makers tolerance 0.0004, obtained from window A, which is applicable to Class 1 and 2 fits, of this diameter.

Minor diameter. This must clear a diameter of 0.9323, which is the minimum minor diameter of the component.

Root clearance 0.016. This is taken directly from window titled N. Half angle,  $30^{\circ} \pm 15$  min. is taken from window L which pertains to all Class 1 fits.

Variation in lead  $\pm 0.0003$  is obtained directly from window titled "Variation in Lead."

It will be noted that the component specifies a 0.37 length of minimum perfect threads. In order to insure that there will be a minimum of 0.37, the following formula has been derived after thorough investigation.

In following the data on right portion of the slide rule, the following is obtained:

M.P.T.=0.37 reference from vertex of major diameter of first full thread, the 0.37 dimension being taken from the component.

M.P.T.+P/2 with a tolerance of +P/20 is equal to 0.4012+0.003.

The 0.4012 length is equal to 0.37+1/2 the pitch of the thread which is found in window titled P/2, which is equivalent to 0.0312 added to 0.37. The gage maker's tolerance of 0.003 is equal to 10 pct of P/2 or P/20 which is found in window titled P/20. The tolerance P/10 is applied to the distance from the face to the vertex of the major diameter at the first full thread. These figures are taken from windows P/2 and P/10. The not go gage dimensions are obtained in the same manner. By using the tolerances shown on the slide rule, the following dimensions are obtained:

Major diam 0.9832 - 0.0006, which is obtained by taking one-half the difference between the major diameter of the go gage 1 in. and the pitch diameter of the not go gage 0.9664 which gives a dimension of 0.9664+0.0168, or 0.9832.

Pitch diam 0.9664 - 0.0003.

The minor diameter will bear a note "must clear 0.9323 diam."

Root clearance 0.016. Half angle, 30°, ±10 min, and variation in lead, ±0.0003 are obtained from the proper windows.

In gaging the 1 in.-16 NS-2 exterior thread, the reverse side of the slide rule is used. In view of the fact that thread ring gages are set with threaded check plugs, the dimensions are applied to the check plug with a notation on the thread ring that it should be set to this plug. As the slide rule is already set to 16 threads per in., the size for the thread check gage may be determined by following the instructions on the rule, using tolerances that cover 1 in. diam and Class 2 fit. The following dimensions are obtained for the go threaded check plug:

Major diam 1.000+0.0006.

Pitch diam 0.9592 - 0.0004.

Minor diameter cleared.

Root clearance 0.016, half angle, 30°, ±10 min. Variation in lead, ±0.0003.

On the go thread ring gage the major diameter will bear a note "must clear 1 in. diam." Pitch diameter will be noted "Fit to check." The minor diameter is dimensioned 0.9323 - 0.0006, which is the minor diameter of the mating nut. Root clearance 0.008, half angle, 30°, ±15 min. Lead variation ±0.0003.

The not go threaded check plug is found to be to the following dimensions:

Major diam 1 in.+0.0006.

Pitch diam 0.9545+0.0003.

Minor diameter cleared.

Root clearance 0.016, half angle, 30°, ±10 min.

Variation in lead, ±0.0003.

The not go thread ring will bear a note on the major diameter that it must clear 1 in. diam. Pitch diameter will be specified "Fit to check." Minor diam 0.9434+0.0006, the same root clearances, half angle and lead variation as the not go check. In gaging the major diameter of the male thread, it is customary to use an adjustable snap gage whose tolerances are found on the gage engineer's slide rule for plain gages.

These slide rules have been found invaluable both to gage designers and gage manufacturers. Their use eliminates, to a large extent, errors in calculation and

*While these slide rules are not available for sale, it is understood that permission to reproduce and use them may be obtained by qualified users on application to the Office, Chief of Ordnance.—Ed.*

provides a standard system of tolerancing which was developed during the late war. In the tool room, a gage maker may manufacture a simple type gage, without drawings, by using the information provided by the rule.

Copyrights have been obtained in the name of the writer on these rules and all rights assigned to the United States Government. This is the first case in the history of the United States that a copyright has been obtained in the name of a federal employee and all rights assigned to the government.

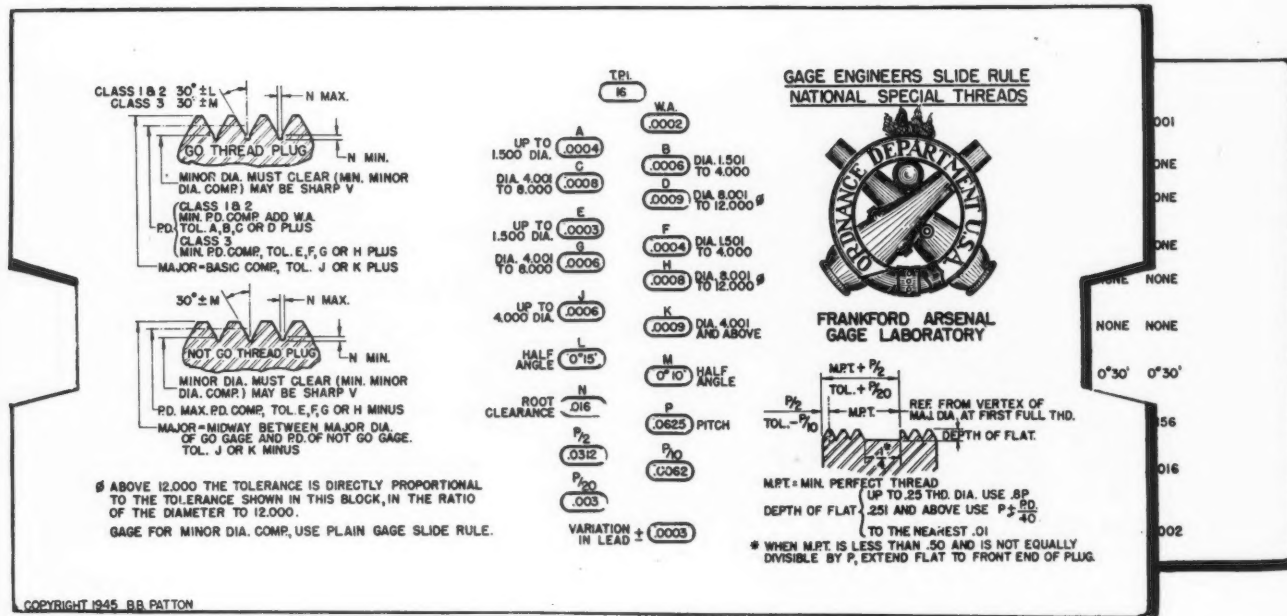
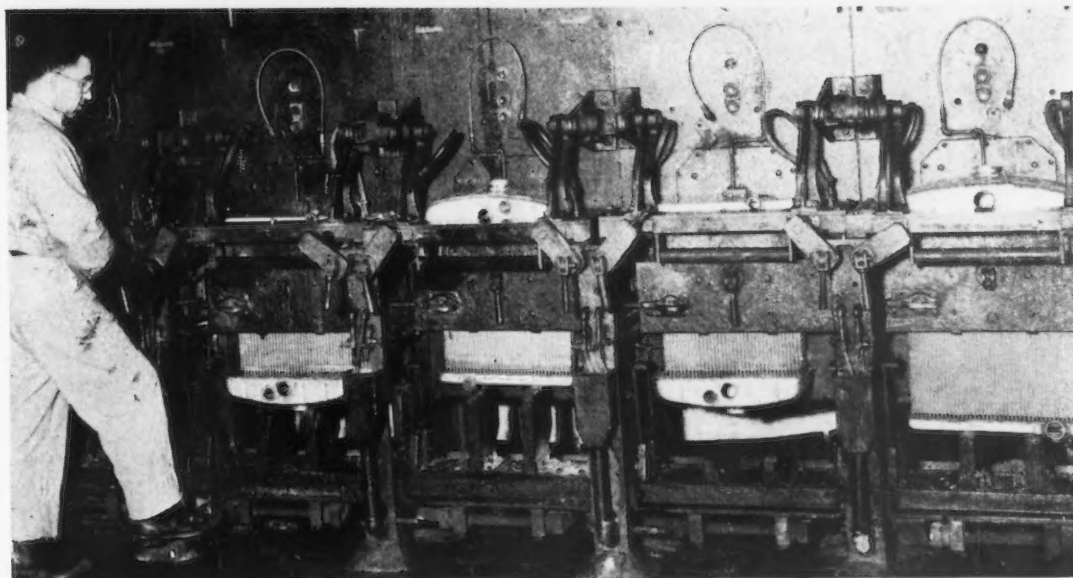


FIG. 4—Special gage engineers' slide rule used for designing thread plug gages.



**FIG. 1**—Special six station fixture for performing two separate soldering operations on three different types of tractor radiators.

## *Radiator Production Accelerated by Induction Soldering*

**I**NCREASED production requirements for the manufacture of tractor radiator assemblies at the tractor plant of the International Harvester Co., necessitated a choice between taking over additional floor space, which was not immediately available, or instituting a more modern and efficient method of soldering.

Accordingly, the company installed a 9600 cycle, 20 kw TOCCO induction heating unit manufactured by Ohio Crankshaft Co., in conjunction with the special six station work unit shown in fig. 1 which was designed by their own engineers. Two operations are required for the assembly, and the fixture is designed to handle the three different types of radiators currently in production.

Automatic heating eliminated many troubles and reduced rejects and field complaints. Moreover substantial reductions in unit costs and very important production increases have been realized.

Induction heating has enabled Harvester to use a prefabricated solder ring containing the exact amount of solder necessary for a perfect joint. Now no solder is wasted and the joint is always uniform. This has not only improved the quality of the finished radiator but results in an annual savings of \$7000 in solder costs alone.

The induction method has increased the production rate 280 pct, the company reports. An operator hand-soldering the assemblies could produce only 10 per hr. Now with high frequency heating, one operator produces 28 per hr.

The radiators are built up from a core assembly and a top and bottom tank assembly. At the first station the operator places a preformed solder ring on the top

tank unit, fluxes the joint, inserts the radiator in the fixture, and pulls down the hinged inductor coil, which is of the split type, as shown in fig. 2. He then pushes the control button and the heating cycle is automatically timed. At the completion of the heating cycle, 30 sec, the radiator is removed, inverted, placed in the adjacent station, and the procedure is repeated on the bottom tank assembly.

**FIG. 2**—A hinged inductor coil facilitates the insertion and removal of radiator assemblies from the fixtures.





# Power Hacksaw Ills— Their Causes and Cures

**I**N a great many machining processes, cutting with a power hacksaw frequently represents the first operation, and the speed and efficiency of this may often govern the meeting of production deadlines. Basically, if the cutting is clean and accurate to the specified tolerances, it may be possible to eliminate machining operations that would ordinarily follow. This represents an immediate saving in time, manpower and material; production costs are reduced, and thus the ultimate aim of efficient cutting operations is obtained.

Industry, therefore, is particularly interested in the ills of hacksaws, and there are many, and in their probable causes and possible cures. These ills divide in a general way into three categories: Crooked cuttings, breakage, and excessive wearing. Tables I, II and III outline these three hacksaw ills with some of their causes and cures. The listing is not complete, but does indicate the most frequent problems and their remedies.

To pin down these ills is not an easy task, since, for example, crooked cutting breaks blades, while excessive wear makes blades cut crookedly, but a hypothetical case may serve as a base. In this hypothetical case the operator may be assumed to be a first class man who, having carefully selected the blade, sets the feed and speed according to the tables on the machine. The blade tension was not adjusted by the common method of tapping it with a wrench until it pinged with the right tone, according to the operator's trained ear, but was carefully tightened by means of a torque wrench. Nevertheless, blades break, cut crookedly, and occasionally wear excessively.

The torque wrench may be the clue to the whole trouble. Without the operator realizing it, the frame of the machine may have been gradually pulled out of alignment through the constant use of this tool. The structural strain may not be great, but it could be sufficient to cause the saw to cut off. It is not uncommon, however, to see power hacksaw machines on which the arm holding the blade has broken off due to continual structural strain when the operator has been tightening the blade to too high a tension. A torque wrench does not give the operator an accurate indication of the actual blade tension, but only of the torque he is actually exerting on the head nut. This may be affected by such unknown factors as the presence of steel chips or accumulated rust between the blade holder and the head nut, which would tend to offset the precision needed to set the blade at its proper tension.

On the other hand, the machine may be in perfect alignment and still cut crookedly. This will happen if there is a hard spot in the material being cut. When the blade hits the hard spot the abrasion causes the blade to overheat. The blade expands, and although this may be but a fraction of an inch it is sufficient to

**Reasons for the frequent breakage, excessive wear, and crooked cutting of power hacksaw blades are discussed herein, together with suggested remedies. A new instrument for maintaining constant tension on the blade during the entire cutting operation is also described, as well as a second instrument for gaging the cutting pressure.**

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o o o

throw the tension off and cause crooked cutting. There is no give and take point in the machine for these minor expansions of the blade, and again the problem is tension.

Hacksaw operators have always recognized the problem of initial stretch with a new blade, and it is standard practice to saw a few strokes with a new blade and then stop the machine to tighten it. If this initial stretch is not immediately compensated for, the saw

**TABLE I**  
Causes and Cures for Crooked Cutting

Cause	Cure
1. Saw frame out of alignment	Realign frame. Do not tighten blade holder more than the amount required for correct blade tension, or control tension automatically and thus eliminate structural strain on the machine.
2. Hard spot in material being cut.	Use correct blade tension and control tension automatically.
3. Decarburized skin on one side of the original stock from which blades were made.	New blade.
4. Wrong blade selection.	Too fine or too wide a set results in the kerf becoming filled with the millings. Proper blade selection is of primary importance. As a rule, use as coarse a blade as possible for easy chip clearance, freer and faster cutting.
5. Set is dulled or worn off on one side.	New blade.
6. Feed is too heavy, springing blade out of alignment.	Check the feed pressure of the machine.
7. Too low blade tension allows blade to spring out of alignment.	Set and maintain proper blade tension through use of automatic device to gain floating tension throughout the cutting operation.
8. Initial stretch of a new blade.	Tighten blade tension after first few strokes or maintain floating tension with automatic device.
9. Eye elongation of blade changes tension.	Maintain constant tension with automatic device.



FIG. 1—This spring loaded Tensiometer serves to maintain constant tension on hacksaw blades, and reduces failures due to improper tension.

will cut crooked, and again the problem is one of setting and maintaining the correct tension at all times during the cutting operation.

Blade breakage presents other problems. For example a battery of hacksaws may be operating without any trouble when a door is opened suddenly on a cold winter's day. A blast of cold air rushes in, and instantly some of the machines have broken blades. The cold air was just enough to contract the blades. The tension jumps, and the blades break. Another situation is that in which blades in good order in the evening may be found broken in the morning, due to a sudden temperature drop during the night. Again the problem resolves into one of contraction and expansion of the blade without any compensating device on the machine to absorb it.

Excessive wearing of blades presents still another series of problems. The eye of the blade may have become worn; the set of the teeth may be fractionally off; tiny chips may get into the blade holders, causing the blade to tilt; or the coolant flow may be insufficient or improper. These are problems with which the op-

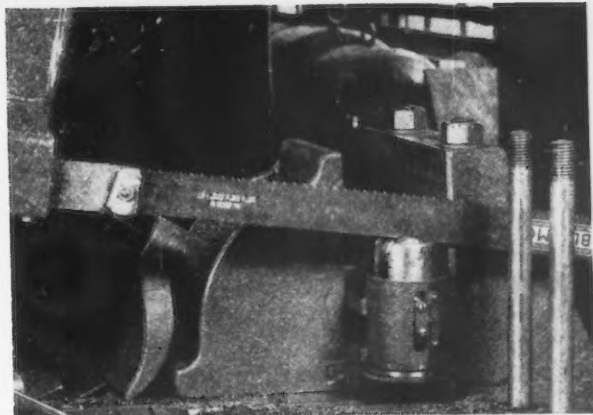


FIG. 2—In using the Pressiometer the saw blade is inverted. The actual pressure exerted by the machine is indicated on a scale on the side of the instrument.

erator can cope, but blade wear is also caused by the constant hammering and pounding of the machine itself. This is particularly true at the beginning of the cutting operation when the saw comes in for the first bites. The tension of the blade at that time is changing more rapidly than in the other steps of the cutting operation, and if the operator is not able to maintain the proper tension the blade will wear rapidly, if not break.

All of these tension troubles can now be overcome as a result of a research program undertaken by Dr. Morris Cohen, professor of metallurgy, Massachusetts Institute of Technology, in conjunction with the Millers Falls Co. This has resulted in the development of a device, shown in fig. 1, known as a Tensiometer, which is capable of regulating the blade tension during the actual cutting operation. Consisting of a small cylinder enclosing a strong spring, this may be attached to the blade holder of a power hacksaw, and can be adjusted to a tension of from 0 to 400 lb. Acting as a shock absorber, the attachment will automatically take up the differences in the stress placed on it, taking up the slack when the blade expands, and giving enough to ease the shock when the blade contracts.

Also designed for use with the Tensiometer is an additional instrument known as the Pressiometer, shown in fig. 2. This is intended for accurately measuring the feed pressure of the blade on the workpiece. Since tension, speed and feed are the three most important factors in the performance of a hacksaw blade, careful attention to all three will result in smoother cutting operations and increased blade life.

TABLE II  
Causes and Cures for Blade Breakage

Cause	Cure
1. Sudden temperature changes in shop.	Compensate by use of automatic tension device.
2. Feed is too heavy.	Check feed pressure of machine.
3. Wrong blade selection.	Proper blade selection is of primary importance. Use as coarse a blade as possible.
4. Heavy blade punishment on initial saw strokes.	May be partially eliminated by controlling tension automatically.
5. Cutting too fast.	Regulate speed according to material being cut. The tougher the alloy the slower the speed.
6. Starting the cut on a sharp corner.	Be certain there is always a minimum of three teeth taking hold at any time.
7. Initial stretch of a new blade.	Tighten blade after first few strokes or employ automatic device.
8. Eye elongation of blade changes tension.	Use automatic device to compensate.
9. Hard spot in material being cut.	Use automatic device to maintain tension.
10. Too high tension pulls out ends.	Use automatic device to maintain correct tension.

TABLE III  
Causes and Cures for Excessive Blade Wear

Cause	Cure
1. Eye pin may be worn.	Check and replace if necessary.
2. Blade is tilted.	Check for milling chips in blade holder.
3. Coolant flow is improper.	Operator should check regularly.
4. Set of teeth off.	New blade.
5. Wrong feed.	Check feed pressure on machine.
6. Wrong speed.	Regulate speed according to the material being cut.
7. Constant hammering of machine.	Maintain constant tension by automatic device.

# A Practical Method Of Selecting the Correct Ty

**I**N order to clarify the variation in tensile strength from the outer edge of the block, the graph, fig. 10, was constructed. The solid lines represent the values found in a series of 4x4x10 in. blocks. The

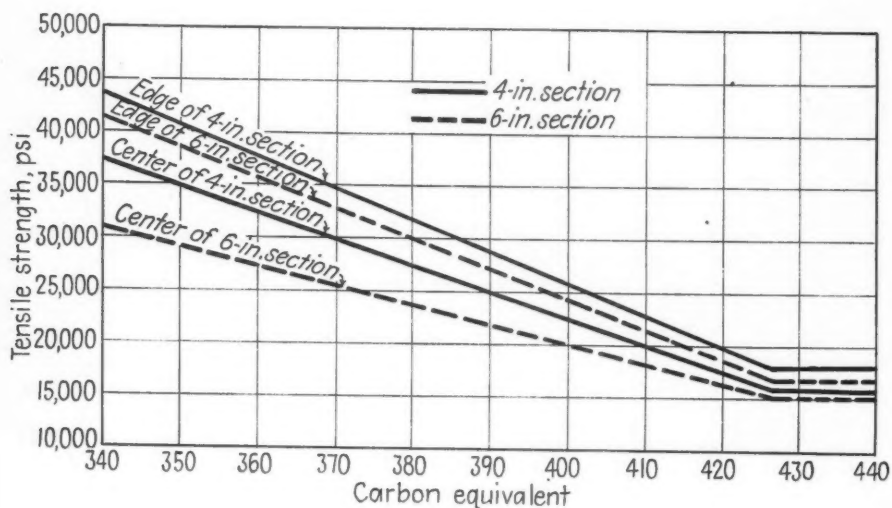
*The first part of this two-part article appeared in THE IRON AGE, Oct. 17, 1946, p. 64.*

upper line was plotted from the outer section of the blocks and the lower line from the center of the blocks. In the 340 CE there is a difference of about 5000 psi. As the CE increases, the values drop and the variation decreases. This may seem paradoxical because it is

usually felt that the lower the CE the more uniform the cross section. That statement is still true. The explanation lies in the fact that by the time the higher CE irons are reached, the strength has dropped so low that it cannot go much lower due to the coarse graphite and increasing amount of ferrite. Hence, the strength of the outer section begins to approach that of the center. Considering at the values for the 6-in. section it is found that the same holds true. The flattening out of the curve at approximately 430 CE is also evident.

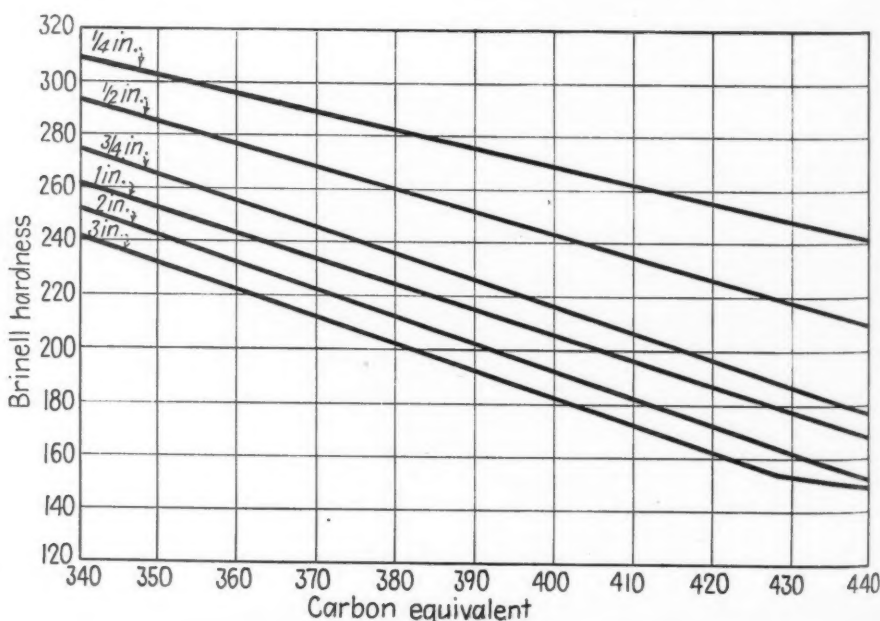
Fig. 11 shows the relationship between the Brinell hardness and CE for sections up to 3 in. Noting the distance on the graph between the lines representing the various sections, it is easy to see the effect of the cooling rate on the hardness. The greater the distance the greater the sensitivity, hence the lower CE irons are less sensitive to section changes than the higher CE irons. This is especially true in sections of less than 2 in. The values in the 2 and 3-in. sections were taken approximately a half inch from the surface of the test block.

Fig. 12 shows the variation in hardness between the edge and center of the heavier sec-



**FIG. 10**—Effect of CE on tensile strength of 4 and 6-in. sections, showing difference in strength between outside and inside in same section.

**FIG. 11**—Effect of CE on Brinell hardness for sections up to 3 in.





# ct Type of Cast Iron

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**A study of melting histories collected at the Allis Chalmers' foundry over the past five years and correlated with physical properties and chemical analyses with the aim of providing the engineer with a practical method of specifying the correct grade of iron for a given section is continued in this, the second part of a two part article. The method developed in this article also enables a foundryman to determine the proper type of iron to meet a given specification.**

tions. The hardnesses were taken a half inch from the edge and from the center of the block in the 2, 4, and 6-in. blocks. The 3-in. block was omitted because its values fell in between the 4 and 6-in. sections and would only complicate the graph. It can be seen that greater uniformity across a section occurs in a lower

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CE iron. In the 2 and 4-in. blocks there is no difference in hardness where the CE is 340, but as the CE increases there is a drop in Brinell toward the center of the block. In the 6-in. section this did not hold true, probably because the iron is about as soft as it can become.

Fig. 13 shows the effect of the carbon equivalent on the tensile strength and Brinell hardness when the cooling rate remains constant. The purpose of this

illustration is to show how the hardness curve follows the tensile strength curve and to show how closely the plotted points fell to the average line as drawn.

The illustrations following fig. 13 are presented to provide concrete evidence of the effect of the CE on physical properties with the cooling rate remaining constant. Fig. 14 is a series of six micros at 100X, unetched, representing the 0.75 in. section of various CE irons. An iron with a 340 CE is shown first in fig. 14. Note the dendritic pattern and the very fine graphite flakes. The next four micros, in succession, represent CEs of 355, 370, 380, and 395. In each of these micros the dendritic pattern is still very evident although this type of distribution is slightly less evident in the 395 CE iron. The size of the graphite flakes remains about the same. The last micro, a 442 CE iron, shows a complete change of distribution. Instead of the dendritic pattern, the graphite now is of the random type of distribution. The flakes themselves

are a little larger than in the other micros.

Fig. 15 covers the same irons as fig. 14, but at 500X and etched in 1 pct nital. There does not seem to be much difference in the pearlite in any of these irons. The most interesting micro in this series is the last one. Here can be seen free ferrite in a relatively thin section. This demonstrates why it is advisable to use an inoculated high CE for thin-walled castings.

Continuing in the same vein, fig. 16 shows the effect of CE on a 6-in. section. There seems to be very little difference between any of them, except, perhaps, a little coarsening of the flakes. All the micros have a random distribution.

Fig. 17 shows the same irons as fig. 16, but taken at 500X,

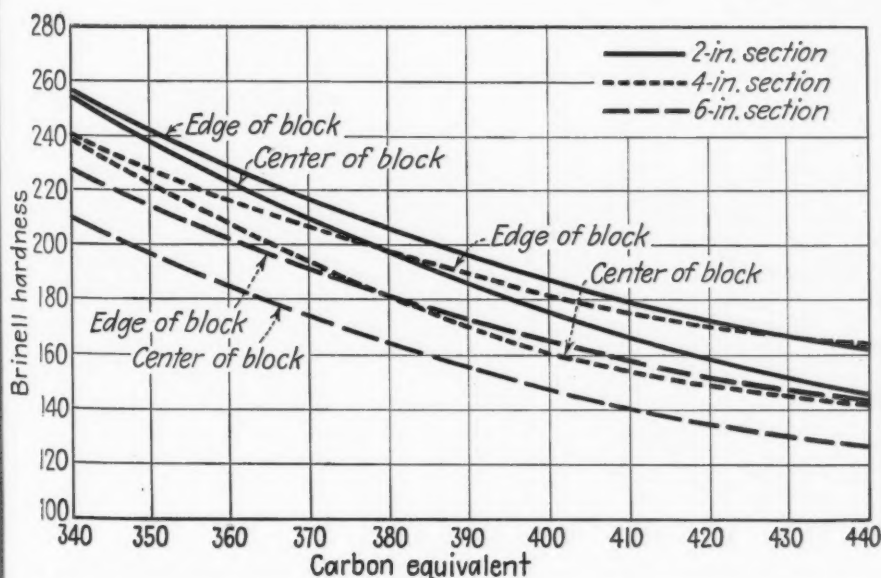


FIG. 12—Variation in hardness between edge and center of the heavier sections at various CEs.

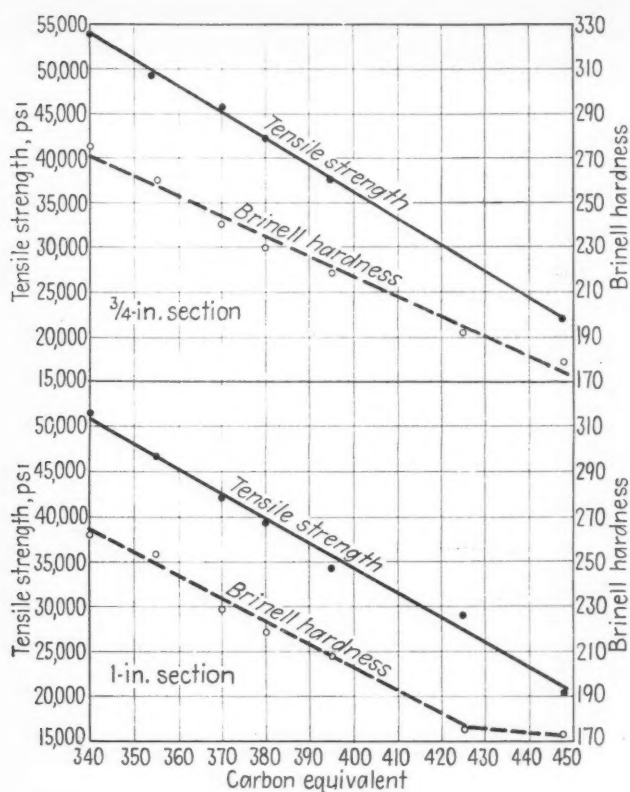


FIG. 13—Effect of CE on tensile strength and Brinell hardness, with cooling rate constant.

etched in 1 pct nital. The first two micros were taken from the outer and inner portion of the 6-in. block cast from a 340 CE iron. There is very little difference in the pearlite matrices of these two. Free ferrite first appears in the 380 CE iron. As the

CE increases the amount of ferrite increases until at 440 CE there is quite a bit of the ferrite. Fig. 18 shows the structure, at 2000X, of the 442 CE iron, nital etched and in the 6-in. section.

Fig. 19 shows a 380 CE iron in various sections. This iron was not inoculated and shows the effect of the cooling rate on the thinner sections. The iron is entirely unsuited for the first three sections because of the chilled areas found and would be hard to machine in the next two sections. This test was made five years ago for another investigation, yet the results are comparable with the most recent ones. The same iron, if inoculated, would be gray in all the sections yet with very little change in the physical properties. By this is meant that in the sections which were gray, therefore considered suitable for use, would still be suitable with very little change. The substantial changes would come in the thinner sections which are now too hard. Through inoculation they would be gray with considerable decreases in hardness and an increase in tensile. It has been found that graphitization in the ladle does not affect the hardness materially in sections which would normally be gray. In sections which might chill or have hard spots there is a very marked reduction because free cementite is not formed.

Fig. 20 shows the fracture of a low 340 CE iron in all sections. This iron was inoculated to prevent the formation of free cementite and the illustration shows gray iron in all the sections. The heavy section shows a uniform grain and has a uniform hardness to the center. This macro and the previous were taken about five years ago. An interesting point to note is that at that time this company was making this iron with about 80 pct steel, 10 pct cast scrap and 10 pct high phosphorus pig. This is a fast setting, hard to handle iron which had to be melted hot. More recently the plant has made iron with the same physical properties with as low as 35 pct steel, and 30 pct pig. Throughout

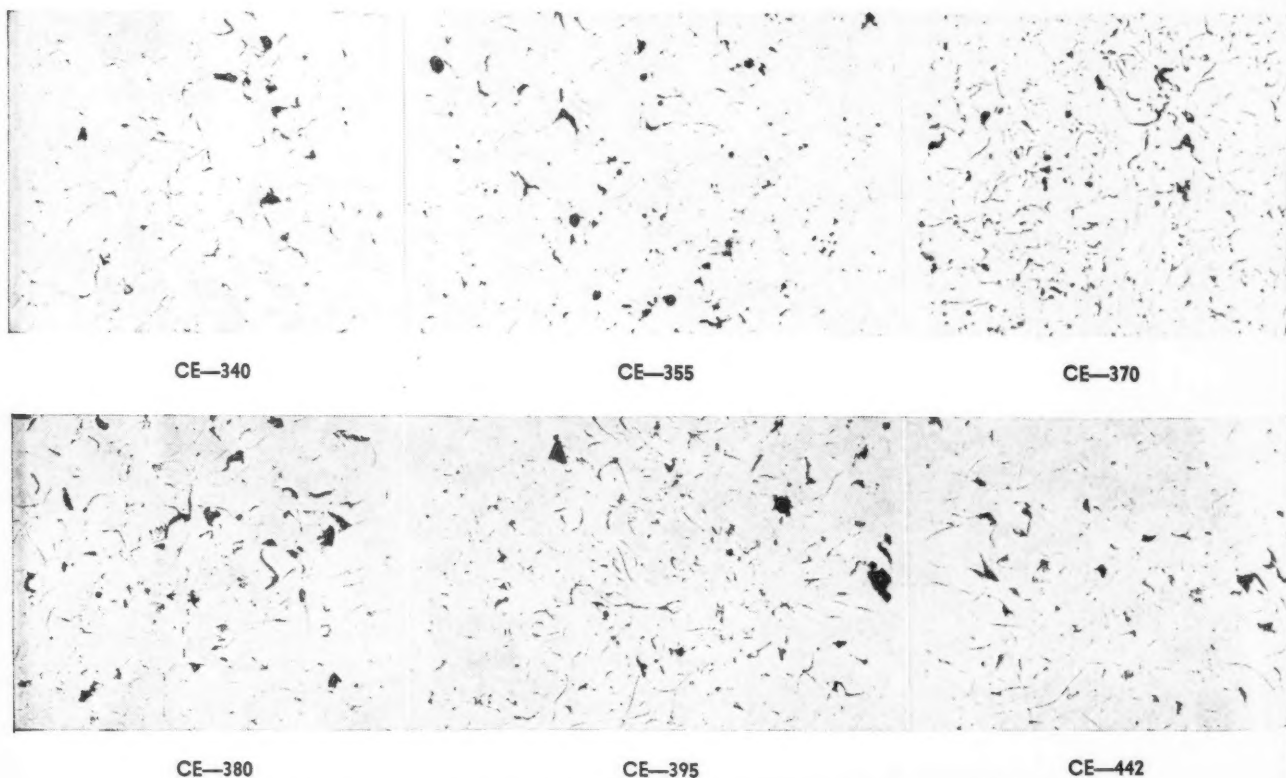


FIG. 14—Microstructure showing effect of CE on physical properties of 3/4-in. sections. 100 X; unetched.

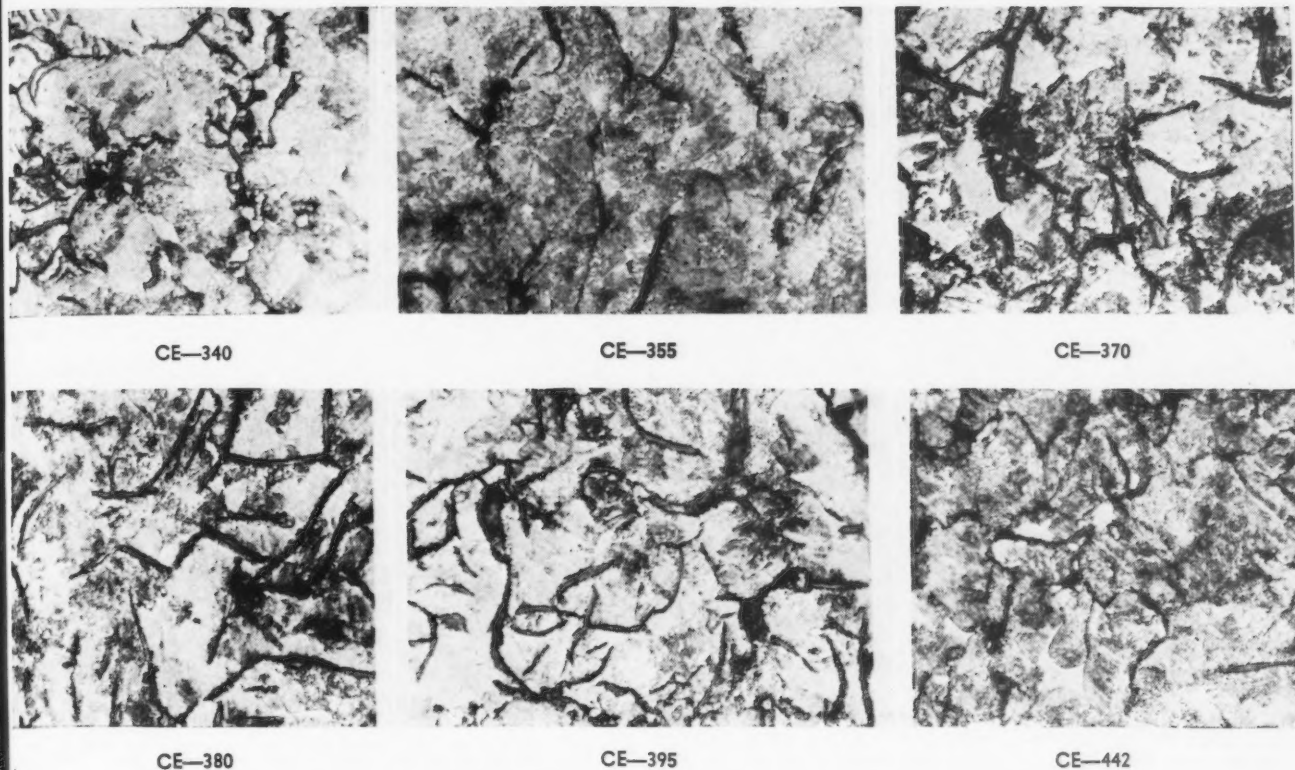


FIG. 15—Microstructure of same irons shown in fig. 14, but at greater magnification. 500X; 1 pct nital etch.

the intervening period the mixture has varied from 85 to 35 pct steel and from zero to 30 pct pig iron, the scrap making up the difference. In all cases the company was required to produce a class 50 iron on a 1.2-in. ASTM bar.

This is not only true of an iron in this class, but is

true of any class for these reasons; by proper cupola procedure such as melting hot, correct tapping, correct slagging, and correct coke-iron ratios the authors believe it is possible to control the physical properties by the carbon equivalent.

The subject of cupola control to get a definite CE is

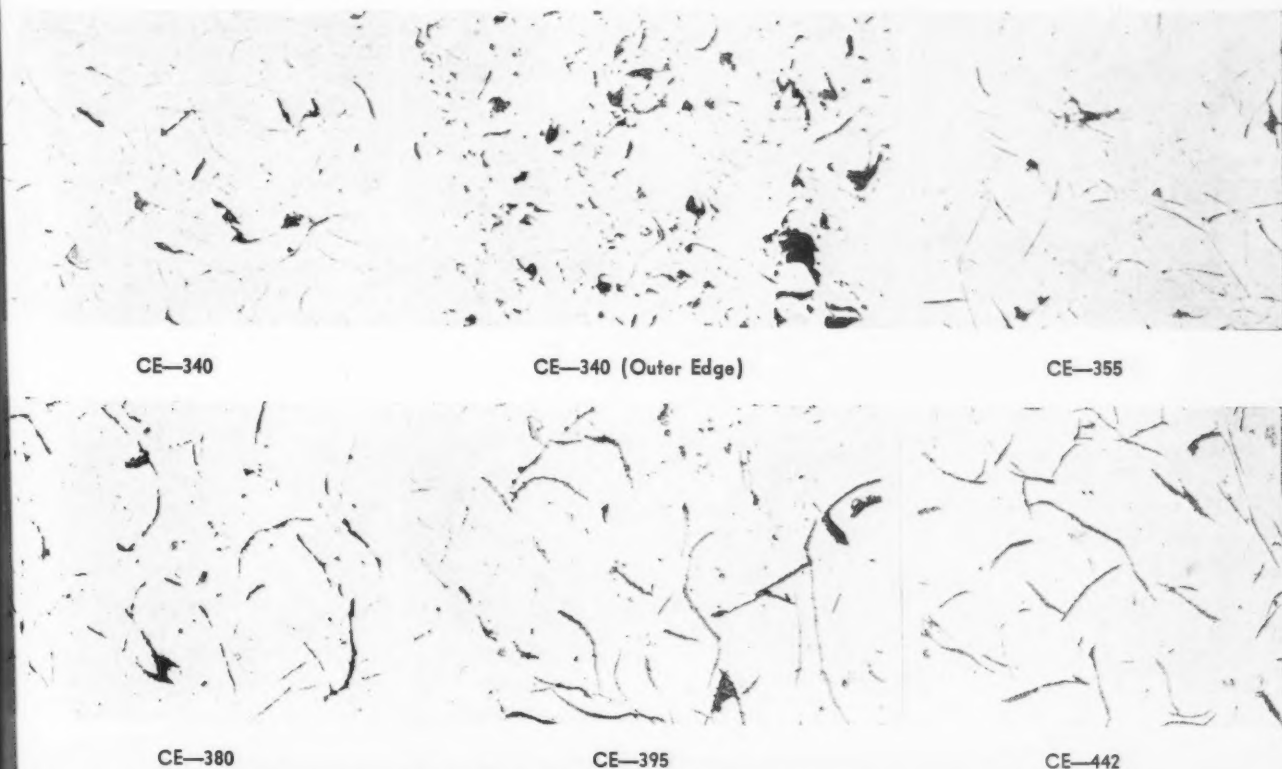


FIG. 16—Microstructure showing effect of CE on physical properties of 6-in. sections. 100X; unetched.



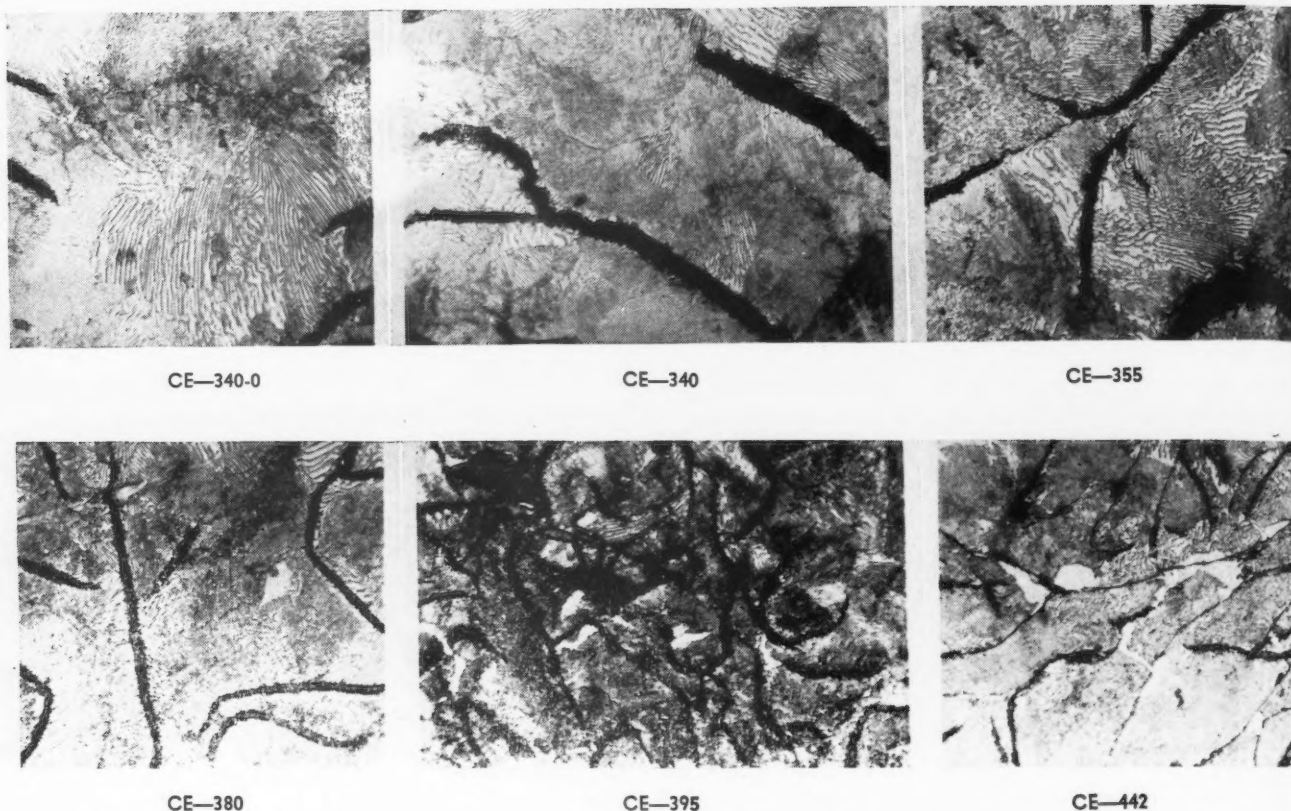


FIG. 17—Microstructure of same irons and sections as shown in fig. 16, but at greater magnification. 500X; 1 pct nital etch.

a subject beyond the scope of this article, but it is true that even the simple matter of tapping the cupola can raise or lower the CE as much as 25 points in the higher class irons. Specifically referring to intermittent tapping, it has been found that at 2800°F the difference between making a tap at 1 min intervals and at 5 min intervals can raise the total carbon from 2.80 to 3.05 pct. This difference will not be as pro-

nounced should the tapping temperature be lowered. By making short taps with a medium coke bed and high blast, irons with 2.5 to 2.6 pct TC have been produced, while with the same mix throughout and long taps of 5 to 8 min, especially where a high coke bed is maintained, the total carbon may go up as high as 3.00 or 3.10 pct.

Another test was run in which the CE and the section were held constant while the cooling rate was varied by shaking out the castings at definite intervals. This test was run on an 8-in. P.D., 3 groove sheave with a rim thickness of approximately 1½-in., two in a mold and produced on one of the production units. Irons with CEs of 440, 420, and 380 (the latter also contained 1 pct Cu plus 0.3 pct Cr) were used. Molds were shaken out 10, 30, and 50 min after pouring, while some of each type of iron were allowed to cool in the sand to below 200°F. All castings in a series were poured from the same 3000-lb ladle.

The tabulated results are as follows:

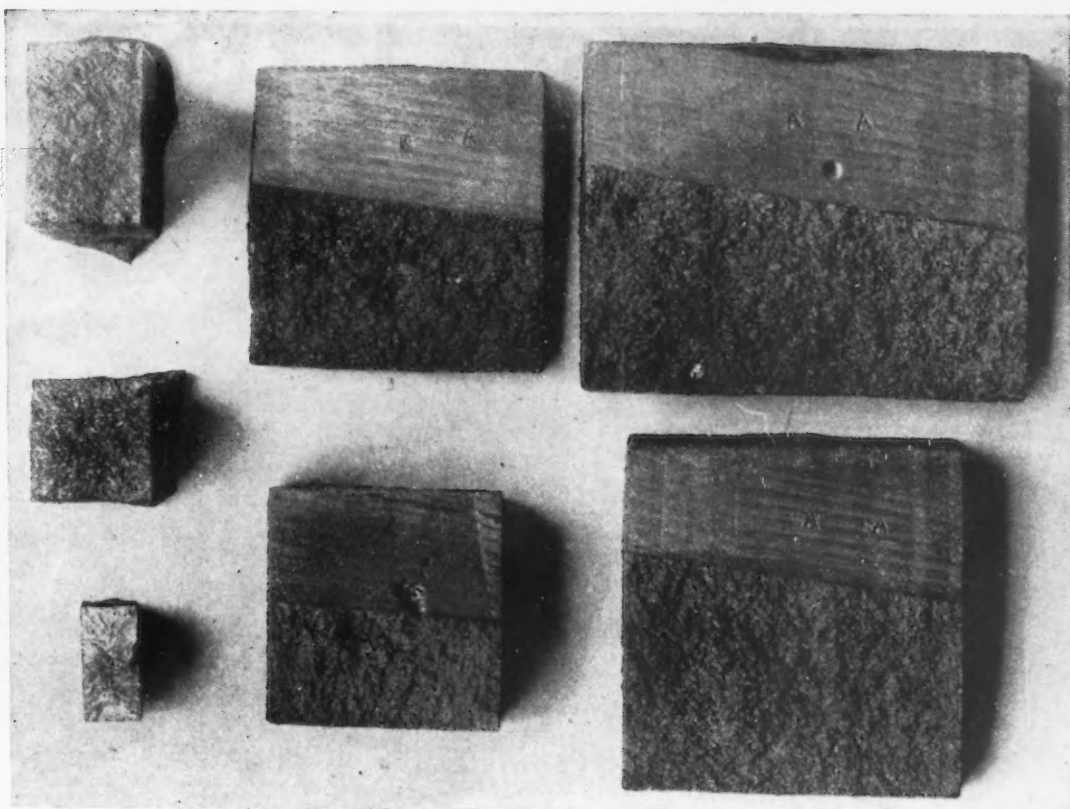
Brinell Hardness (Average)					
Type Iron	10 min Shakeout	30 min Shakeout	50 min Shakeout	Overnight Shakeout	Total Drop in Bhn
380 CE (1% Cu+0.3% Cr) ..	229	229	218	179	50
420 CE .....	229	229	201	174	55
440 CE .....	197	192	163	152	45



FIG. 18—Microstructure of the 442 CE iron of figs. 16 and 17. 2000X; nital etch.

The results of this test follow those of previous tests and show the effect of cooling in the mold very conclusively. From the table it can be seen that there is

FIG. 19—Fracture of the 380 CE iron.

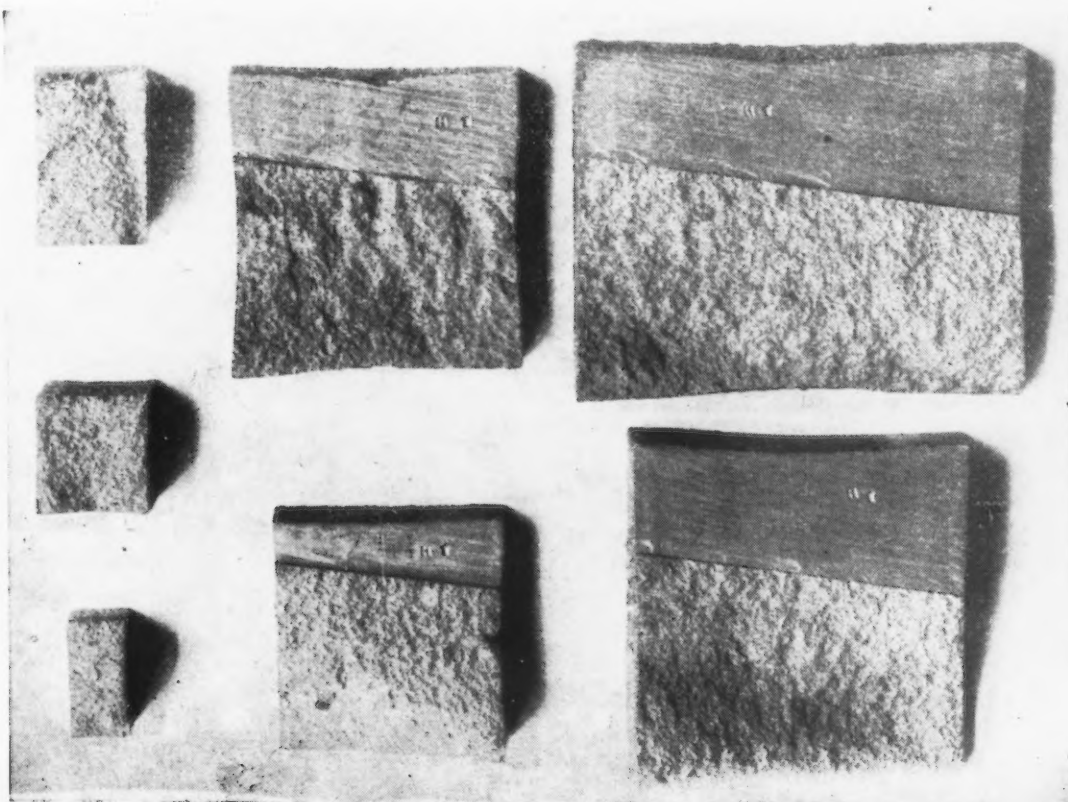


no change in hardness, until the castings have cooled in the mold for over 30 min. This means that the machine shop can get a nice close-grained casting which is still easily machined by merely pouring a good grade of iron and utilizing the proper thermal history.

The authors wish to add a word of caution in inter-

preting the results shown in this paper. The charts developed apply specifically to Allis Chalmers and will not necessarily be accurate for other plants unless their foundry procedures are similar. There are some variables such as molding techniques, melting practices, presence and location of cores, etc., which in-

FIG. 20—Fracture of an inoculated 340 CE iron, showing gray in all sections.





fluence the charts, and must be considered when decisions regarding metal and physical properties are made. However, comparing these results with data from other foundries, quite close agreement is found.

Summing up, then, it can be concluded that:

(1) By varying the cooling rate, which is in effect changing section size, under constant mold conditions with the CE constant, the tensile strength and Brinell hardness will vary directly.

(2) By varying the CE and keeping the cooling rate constant, the tensile strength and Brinell hardness will vary indirectly.

(3) High CE irons are more sensitive to cooling rate than low CE irons, especially in thin sections.

(4) There are wider variations in tensile strength from the edge to the center of the heavy sections in a low CE iron than in a high CE iron, due to the large amount of ferrite in the heavy sections.

(5) There is a greater variation in hardness from the edge to the center of heavy sections in high CE irons than in a low CE iron.

(6) Graphitization in the ladle has little effect on Brinell in normally gray sections.

(7) Graphitization in the ladle has considerable effect on Brinell and tensile strength in normally chilled sections.

(8) By controlling the CE, proper cupola practice

and metal handling, the desired physical properties can be obtained with wide variations in the mix.

### Acknowledgment

*The authors wish to thank the foundry management and the staff of the Research Department for the assistance which made these tests possible.*

(9) By varying cupola control with the same mix, various CEs can be obtained.

(10) Some physical properties can be altered when the section and CE are constant by varying the cooling rate.

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"Cast Iron Strength v. Structure," by R. R. Adams, AFA Trans., vol. 50, 1943.

## New Surface Pyrometer Developed by U. S. Steel

A NEW radiation type of surface pyrometer, effective for temperatures up to 2400°F, has been developed at the Kearny, N. J., research laboratory of U. S. Steel Corp. The instrument was developed to permit quick and simple readings to be made of steel slabs<sup>1</sup> progressing through a heating furnace. The accompanying photographs show the exterior and interior construction of the unit. A long tubular handle

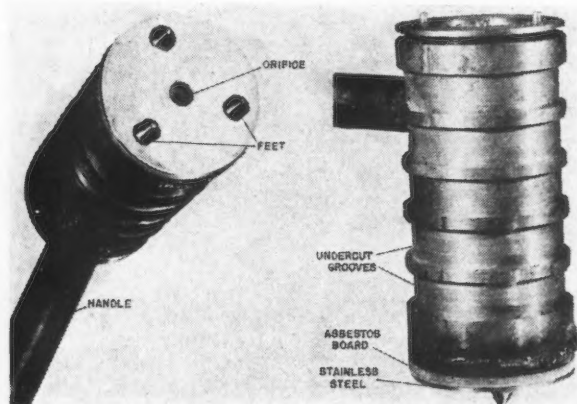
<sup>1</sup> Use of the pyrometer in investigating the heating rates of slabs in various locations in a reheating furnace are discussed in THE IRON AGE, Oct. 10, 1946 p. 74.

fixed to the pyrometer head simplifies its use in taking readings and also accommodates cooling water and lead-in wires.

The pyrometer is used by thrusting the head through a furnace door and permitting the head to rest on the slab on its three stainless steel feet. Readings may be made, according to the laboratory, in 3 to

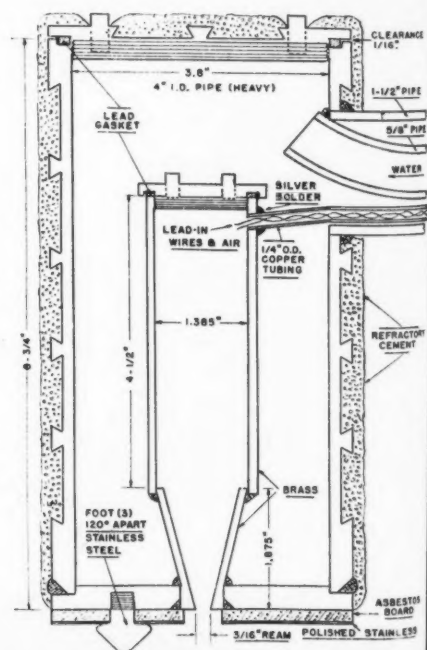
5 sec when using a high-speed recording potentiometer. When a manually operated potentiometer is employed readings may require up to 25 sec. Accuracy of the unit is believed to be  $\pm 5^\circ\text{F}$  as long as the surrounding temperature of the radiation tube is kept within 80° to 110°F.

This new instrument has been patented by J. W. Percy of the research laboratory, J. Johnston, director, and R. B. Sosman, assistant director of the laboratory. The patent has been assigned to U. S. Steel Corp.



LEFT  
EXTERIOR view of the surface pyrometer before a coating of refractory cement has been applied.

RIGHT  
CONSTRUCTION details of the new surface pyrometer.



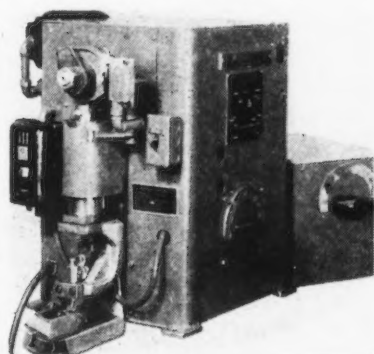


# New Equipment . . .

## Welding

**Bench type and heavy duty spot welders, arc welders for railroad and farm equipment maintenance, and a welder control unit, together with soldering tools, electrodes and holders, are among the newly developed welding units described in this week's review.**

**M**ODEL A-11 bench type spot welder developed by *Thomson Electric Welder Co.*, Lynn, Mass., has been designed for rapid resistance welding of small parts. The welder is driven by a  $\frac{1}{4}$ -hp motor and operation is initiated through a solenoid clutch pull controlled by a foot push button switch. Two transformer capacities are available, 10 and 15 kva. Current control is obtained by a multileaf fan-type cam mounted on the cam shaft, with heat regulation provided by a 5-point regulator. The method of pressure appli-



cation incorporates a round cast bronze spindle sliding in a cast iron ram giving a vertical motion to the upper arm. The pressure cam is designed to cushion electrode travel and avoid hammering. Another feature of the welder is a two-way adjustment of the lower arm which can be raised or lowered or shifted laterally as the nature of the work requires. Electrodes are water cooled.

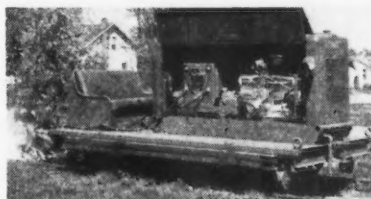
### Seam Welder Fixture

**I**NCORPORATING a stationary welding head under which the work moves in a continuous stream, continuous seam welding of rounds, squares and other shapes of tubes and tanks, can be accomplished with automatic fixtures which

have been announced by the *Victory Engineering & Machine Works, Inc.*, 3000 Chouteau, St. Louis 3. The automatic seam welder has a variable speed range of from 60 to 150 ipm of weld. The drive includes reversing and inching controls and speed can be altered while the work is in motion. Three models having continuous micrometer size adjustments from 4 to 12 in., 12 to 24 in. and 24 to 36 in. in diam and adjustment for wall thickness from 18 gage to 3/16 in., are available. It is said adjustments from one size to another can be made in less than  $\frac{1}{2}$  hr. With the use of this automatic fixture, weld can be carried on from one piece to the next without interruption. The length of tube being continuously welded at one time is dependent on the methods adopted by the user in bringing the preformed tube to the fixture and the support and removal of the welded tube after leaving the machine.

### Railway Welder

**S**PECIALY designed for all railway welding, particularly along the right of way, new models of the selfpropelled railway welders in 300 and 400-amp sizes have been announced by the *Hobart Brothers Co.*, Troy, Ohio. This equipment, which can build up quickly worn rail ends, moves un-

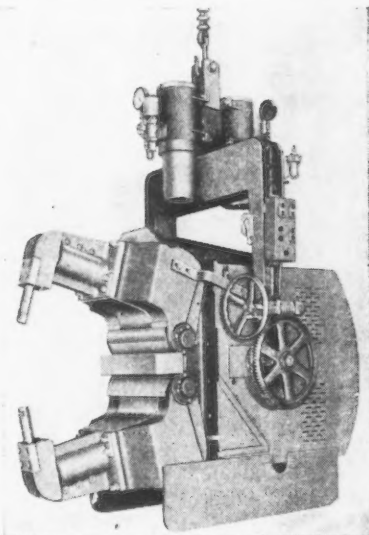


der its own power from place to place and is easily derailed to clear the tracks if necessary. A gasoline engine drives the arc welding generator, from which power may

also be taken to operate the heavy duty electric motor that drives the rear wheels. Speed can be varied from practically nothing to 20 mph and power is sufficient to tow a work car with 8 or 10 men aboard. Wheels are standard railway track gage.

### Giant Spot Welder

**C**APABLE of welding up to three thicknesses of  $\frac{1}{2}$ -in. structural steel without removing the rust and scale usually present on this material, a giant portable

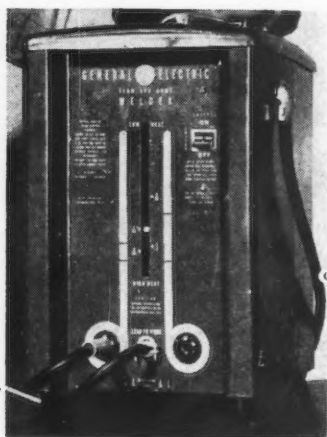


spot welder has been announced by *Sciaky Bros., Inc.*, Chicago 38. Application is primarily for speeding prefabrication of large structural units in shops. Welding through rust and scale is accomplished by an electronically controlled sequence which provides a preweld period of high pressure and low current which burns off oxide, allows perfect fit of parts and reduces electrode tip deterioration, a high-current welding period, and a postweld period which retains the high current under high pressure to prevent coarse structure and internal cracks. Where

high carbon steels are to be welded, a special quench and postheat period is provided. Peak power demand when welding the maximum thicknesses is around 500 kva. Speed is from 2 to 25 spots per min, depending upon thickness and degree of scale.

#### Home Arc Welder

**D**ESIGNED for operation on single-phase lines of limited capacity supplying rural areas and small communities, an ac farm and home arc welder has been announced by the *General Electric Co.*, Schenectady 5. Conforming to necessary standards and requirements for farm welders, the unit incorporates safety features protecting both the operator and equipment. The welder is constructed to use the lowest possible welding voltage, and is enclosed in an electrically

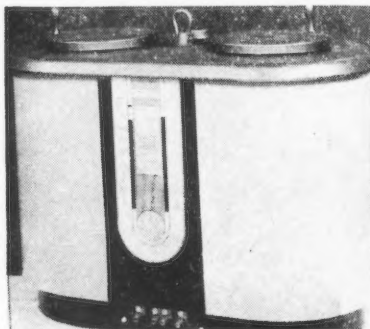


grounded metal case. It is furnished in two ratings, 130 and 180 amp, either with or without capacitors. It has two plug-in connections for the electrode cable, one for use with 1/16 or 5/64-in. electrodes and one for 3/32, 1/8 and 5/32-in. electrodes. A welding current scale located on the front of the machine is calibrated in electrode sizes rather than in amperes. An electrode gage makes possible quick identification of electrode size.

#### Twin-Unit Arc Welder

**F**OR outdoor use, a twin-unit, ac arc welder in a single enclosure has been announced by the *Electric Welding Div. of the General Electric Co.*, Schenectady 5. Each of the two circuits in the welder can be used simultaneously and independently with electrodes up to 3/16 in. in diam, or combined into one circuit for heavy welding with 3/8-

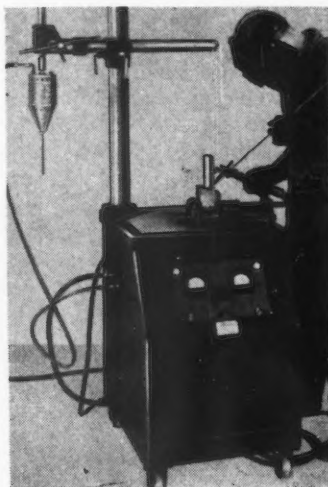
in. electrodes. The units have a current range of from 90 to 270 amp when used singly and from 180 to 540 amp when operated in parallel. Both welders are equipped



with control which reduces the open circuit voltage to approximately 30 v when the machine is not welding, but which makes full power available the instant the arc is struck. Only one power-line circuit to the unit is required. Dripproof construction of top openings and a sealed window over the current indicators provide protection against rain, snow, and sleet.

#### Multioperational Machine

**M**ANUFACTURE of the 8-in-1 Metal Master, featuring eight different metalworking operations built into one machine, has been announced by the *Clinton Machine Co.*, Clinton, Mich. The Metal Master can be used for metal disintegration, arcwelding, brazing, soldering, drill pulling, air extraction, metal etching and demagnetizing operations in tool and die rooms, tool salvage and mainte-



nance departments, and on production lines. Completely portable for use in any part of a plant, and by a simple plug-in to a convenient

outlet any of the eight operational units can be put into operation without tear-down or set-up. The arcwelding unit will do flat, vertical, overhead or horizontal welds, fabricate tools, dies and fixtures, tack weld on tanks, etc. This unit provides 100 amp for 30-min runs, up to 200 amp for intermittent runs, with 8 heat stages, and uses up to 3/16-in. rods. Soldered joints and seams also are effected with this unit. For the fusion of light metals, a brazing unit fabricates or repairs aluminum, brass, bronze, and nickel parts.

#### Farm Welder

**I**NCORPORATING the multi-range dual welding control, a simplified low cost farm welder has been developed by the *Hobart*



*Brothers Co.*, Troy, Ohio, for operation on 230-v single phase rural power lines with a maximum input of 35 amp to conform to rural electrification requirements for this type of welder. The welder can be used with the standard 3-kva transformer and has a welding range of 20 to 180 amp to produce sound welds, using electrodes ranging from 1/16 to 5/32-in. diam. Multirange dual control eliminates use of plugs and jacks and no live connections are exposed. Because of special, inbuilt construction, the striking voltage increases as welding current is reduced, making it easy to start and maintain the arc under all conditions. This design also eliminates the use of relays and contactors. A capacitor is included for power factor improve-

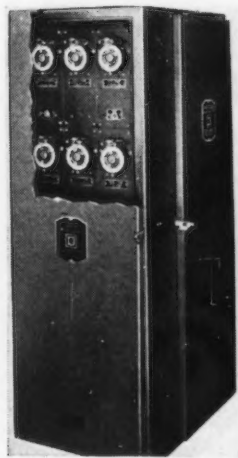


## NEW EQUIPMENT

ment. The cabinet is of pressed steel arc welded into one piece for maximum rigidity and minimum vibration. Large casters and lightweight (224 lb) make for easy portability.

### Combination Welder Control

**A**UTOMATIC control of air-operated resistance welding machines has been provided in a combination control unit, Class 8992, designed by *Square D Co.*, 4041 N. Richards St., Milwaukee 12, to meet NEMA standards for resistance welder control. A Synchro-Break welder contactor and Safront sequence-weld timer are included in a single enclosure arranged to mount on the right hand side of the machine with all control elements within easy reach of operator. Only four mounting holes

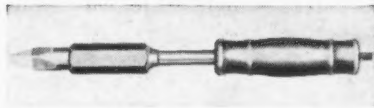


need be drilled in the machine. Conduit and fittings are minimized and fuse protection of all control circuits is included. Foot, pressure and no-weld switches and timer control circuits operate at 110 v. Control circuit may be either separate or common with the power circuit. Standard controllers have tapped primary control transformers which can be connected for operation at 110, 220, or 440 v. 60 cycles; or for 380 v, 50 cycles.

### Soldering Irons

**A** LINE of 32-v soldering irons for use on farm or home generating systems has been presented by *Hexacon Electric Co.*, 144 West Clay Ave., Roselle Park, N. J. These irons incorporate standard Hexacon features including replaceable elements and tips; heating elements housed in damage proof, hexagonal

barrels, and a 6-ft flexible heater cord. The plug is a shatter-proof, live rubber type. Screw tip irons are available in sizes ranging from



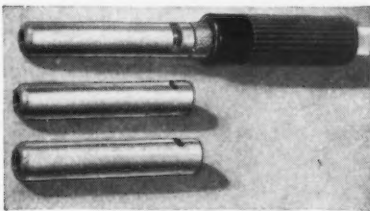
90 w with 1/2-in. tip to 500 w with 1 1/8-in. tip. The plug tip range is from 100 w with 3/8-in. tip to 550 w with 1 1/8-in. tip.

### Flux-Coated Bronze Rod

**A** FLUX-coated bronze welding rod, for application by the oxyacetylene process has been developed by the *Linde Air Products Co.*, unit of Union Carbide & Carbon Corp., 30 East 42nd St., New York 17. This rod, known as Oxweld No. 25M, flux-coated bronze rod, combines all the properties of the Oxweld No. 25M bare bronze rod with correct fluxing. The coating consists of Brazo flux plus a nonactive binder that does not affect the weld, it is said. It adheres firmly to the rod, melting down into the molten puddle without burning off ahead of the rod. The rod can be heated and bent without destroying the coating. The coating is not affected by weather conditions.

### Air-Acetylene Tips

**D**EVELOPMENT of an attachment with which, it is claimed, it is easy to adapt any standard oxyacetylene welding torch for body soldering, tinning and light brazing with an acetylene-air flame, has been announced by the *Acet-A-Tip Co.*, 5069 W. Madison St., Chicago 44. Acet-a-tips are attached to the welding torch tip by means of a base, fitted with a 2-in. length of heavy-duty hose, which is forced over the welding torch tip. Avail-



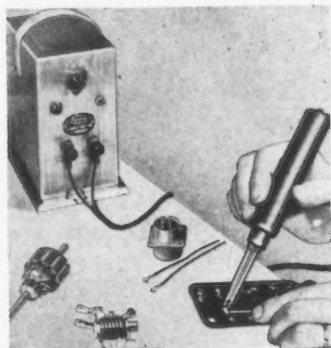
able in three sizes, Acet-a-tips are precision-machined from solid brass bar stock. To use these tips, the acetylene pressure is set at approximately 5 lb, and the flame is adjusted by the torch valve. Oxygen is not used with these tips.

### Aluminum Flux

**F**LUX for brazing of aluminum with X716 wire has been introduced by *A. K. Mauk*, 7501 Hamilton Ave., Pittsburgh 8. Designated as Flo-Well No. 2, it is useful in either furnace brazing or torch brazing aluminum and can be applied by inexperienced workmen. It will not solidify or deteriorate, it is said. The flux is packaged in 1/2 and 1-lb glass jars for protection from moisture.

### Soldering Tool

**W**ITH two power unit models and a choice of eight basic single or double carbon electrodes, a resistance type soldering tool for fine precision or heavy industrial operations has been designed by the *Luma Electric Equipment Co.*, Toledo 1. Four ranges of power units are offered; two single stage tools having a range from 1050 to 1225



w, and two multistage, from 1575 to 2500 w. The multistage unit, illustrated, is equipped with a selector switch that gives instant temperature control at six different settings to suit the soldering job. Electrodes equipped with 5-ft flexible cables, range in size from 3/32 to 1/2-in. diam. Weight including cable is only 6 oz. The tool requires no preheating period; operating current is in use only during actual operation, when contact of electrode with job is made. All power units are fiberglass insulated throughout and may be used continuously.

### Hard-Facing Electrodes

**T**WO shielded arc electrodes for specific hard-facing applications have been designed by the *Lincoln Electric Co.*, 13008 Coit Rd., Cleveland 1. Abrasoweld AC electrode builds up straight carbon steel, low alloy steel or high man-



ganese steel with a self-hardening deposit to resist severe abrasion, battering and impact. This electrode is available in  $\frac{1}{8}$ ,  $\frac{5}{32}$ , and  $\frac{3}{16}$ -in. sizes and is furnished in 14-in. lengths, for ac and dc operation. Manganweld A electrode, generally recommended for flat work only, is now manufactured for all resurfacing and building up applications of high manganese steel and is sometimes applied only as top beads where an abrasion resisting surface is required. This electrode is furnished in  $\frac{5}{32}$ ,  $\frac{3}{16}$ , and  $\frac{1}{4}$ -in. sizes and 14-in. lengths, and can be used with ac and dc machines.

#### Tong Type Electrode Holder

**K**NOwn as Twecotong, a line of manual arc welding electrode holders has been announced by the *Tweco Products Co.*, Wichita 1, Kans. This line includes full-insulated and semi-insulated models.



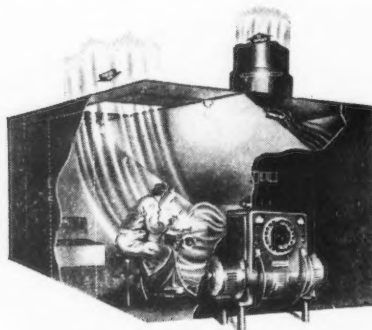
Twecotong is a tong type holder, featuring almost indestructible molded-laminated glass cloth Bakelite insulation keyed to the holder casting. The tensioning spring seats firmly on fiber upset washers and is protected from spatter by nonbinding Neoprene tubing. A ventilated fiber handle, together with good cable connection, is said to assure a cool running holder. All parts are replaceable.

#### Electrode Holders

**A** COMPLETE line of air cooled carbon electrode holders for manual welding has been announced by *Tweco Products Co.*, Wichita 1, Kans. The line includes four sizes, 150, 200, 300 and 500 amp models. Positive Hol-Grip design with ample length and ventilation are features of this new line. The average carbon arc welding job is done with either the  $13\frac{1}{2}$  oz 150 amp holder or the 20 oz 200 amp unit. These two units are furnished optionally with or without special Quick-Attach whip cables for short duration jobs. The 300 and 500 amp models are suitable for heavy welding, and cutting jobs.

#### Welding Booth

**T**O PROTECT health and provide pleasant working conditions for production welders, a fresh air, safety welding booth has



been designed by the *Hobart Brothers Co.*, Troy, Ohio. The booth is  $9\frac{1}{2}$  ft wide,  $9\frac{1}{4}$  ft deep and 7 ft high. It is constructed of fabricated panels of 16 gage sheet steel formed with companion flanges, punched on 12 in. centers for bolting assembly. The door is sliding type with an overhead track. A heavy duty exhaust fan draws in the fresh air through an opening in the top, down past the operator to pick up welding fumes and heat, and then expels it to the outside of the building.

#### Welding Goggle

**A**TTACHED by a friction joint to a head gear assembly, a welding goggle which can be thrown into off-guard position has been announced by the *American Optical Co.*, Southbridge, Mass. Adjustable for individual features, the goggle is equipped with opaque eyecups designed for wearing directly over eyes or over personal prescription glasses. Indirect, ventilated side shields keep out stray light rays, sparks and metal splashes, yet provide ventilation to reduce fogging.

#### Spatter-Proofing Compound

**F**OR protecting work surfaces from spatter during welding operations, a compound, known as Protect-O-Metal No. 2, has been announced by *G. W. Smith & Sons*, 116 South Sperling Ave., Dayton 3. This material is a gray creamy liquid which is brushed or sprayed directly into the seam to be welded and on surrounding surfaces where spatter usually collects. During the welding operation the compound in the seam fuses in with the molten metal, removing all oxides and impurities from the weld, it is said,

and prevents porosity formation. After welding, all spatter, surface oxide and remaining compound can be removed with a damp cloth. Protect-O-Metal No. 2 is available in 1-gal or 5-gal cans. For average welding it can be thinned with an equal part of water.

#### Electrode Dressing Tool

**T**O INCREASE tip life of resistance welding electrodes, a dressing tool designed to suit the initial contour of the tip, particularly that part adjacent to the welding surface, has been announced by *Edward T. Klee*, 849 Free Press Bldg., Detroit 26. The dressing tool consists of two or more files held in correct angular relationship in a metal holder. The inner edges of the files are spaced according to the tip diameter required. Two handles are attached to the ends of



the metal holder and the tool can be used as an ordinary file or a cutting tool, in which case it is rotated between the closed electrodes.

#### Silver Brazing Alloys

**T**WO silver brazing alloys, called Easy-Flo 45 and 35, featuring low silver content have been announced by *Handy & Harman*, 82 Fulton St., New York 7. Easy-Flo 45 is a 45 pct silver alloy, also containing copper, zinc and cadmium. It has a low melting range of  $1120^{\circ}$  to  $1145^{\circ}$  F and is said to produce strong, ductile, and leak tight joints between ferrous, nonferrous and dissimilar metals. The 35 pct alloy has a wider melting range,  $1115^{\circ}$  to  $1295^{\circ}$  F, and is said to be free flowing at an exceptionally low temperature.

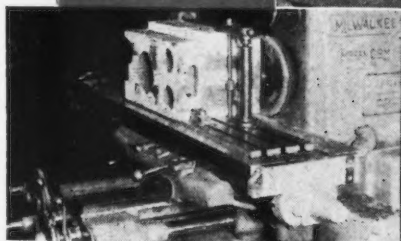
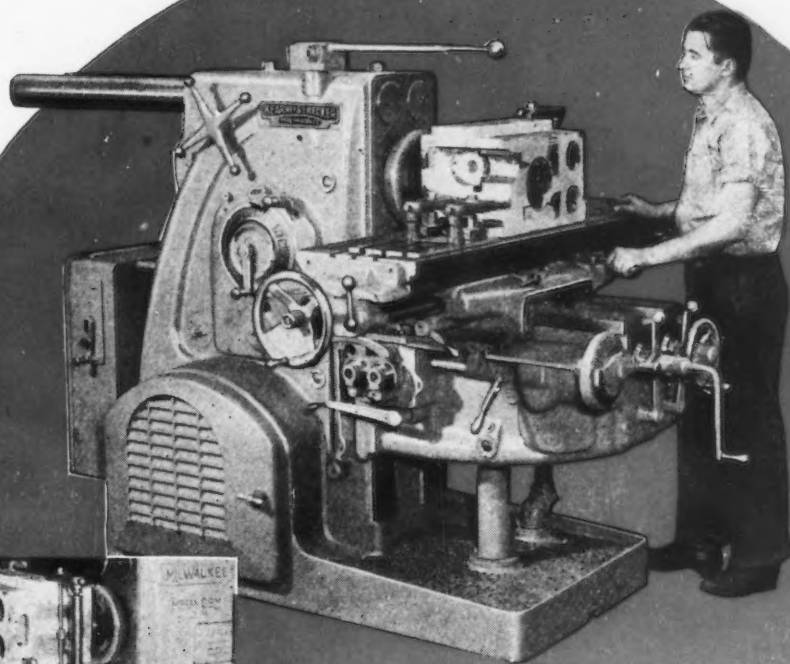
#### Shielded Clamp

**I**NCORPORATING the Bar-Lok principle, a quick action C Clamp has been developed by the *Mechanics Engineering Co.*, Box 243, Jackson, Mich. The clamp has as optional equipment a detachable shield to protect the holding unit against spatter when the tool is used on welding work. The clamp, which is precision built for medium duty jobs, is available in sizes ranging from  $1\frac{3}{4}$  to 3 in. in depth, with opening from 2 to 6 in.

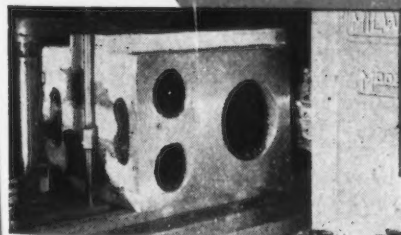
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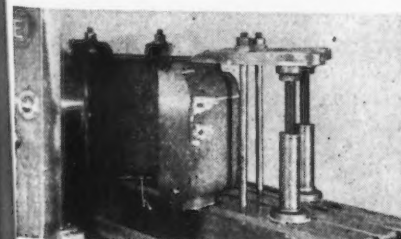
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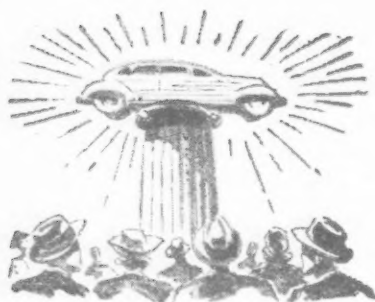
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# Assembly Line

WALTER G. PATTON

• Ford openhearth stoppage costs 17,000 tons of steel . . . Studebaker introduces its 1947 Commander . . . Great Lakes to install additional cold-rolled capacity.



**D**ETROIT—The addition of 2 oz of sodium fluoride per ton of steel to ingots produced at the Ford Motor Co.'s Rouge plant has recently cost that producer an estimated 17,000 tons of steel over a 10-day period according to a recent announcement by Henry Ford II, president of the company. For the same reason it is estimated that the motoring public will lose 14,000 automobiles and the corresponding loss in wages by Ford workers will aggregate \$3 million.

Ford openhearth operations have now been resumed and a test is being made this week in the presence of a representative of the Michigan State Board of Health, the union and the company to determine if the fumes given off when sodium fluoride is added to steel ingots are actually injurious to workers as charged by the union. Sodium fluoride is added to the ingot molds immediately after pouring to improve the rimming action. The treatment is used only where the steel is to be rolled into sheets.

A spokesman for Ford has indicated that a sodium fluoride addition to steel ingots has been made over a period of several months. No official complaints were made to the company, it was said, until recently when a worker was taken to the company hospital. According to the

union this operator was kept under oxygen for a 24-hr period following exposure.

**F**ORD maintains that sodium fluoride additions are employed by other steel producers without ill effects, while the union contends that a major steel producer has abandoned the practice because of the health hazard involved.

According to Ford, the strike was instigated and prolonged by a small insurgent faction among Ford workers who, it is asserted, excused their action by saying that "there is a health hazard in the openhearth." The company and the union, Ford said, "are in complete agreement on handling the complaint of a health hazard."

Ford has also stated that crane cabs are equipped with blowers and that gas masks are provided for operators which may be worn if desired during the brief period when sodium fluoride is added.

According to Richard T. Leonard of UAW-CIO, crane operators at Ford refused to allow themselves to be exposed further to the fumes only after the company's refusal to take action against "this industrial poison" which, the union said, constituted a threat to all workers in the area."

**T**HE union has also asserted that the company by moving to penalize workers involved in the strike, violated a verbal agreement with the union that no such action would be considered before the union and company representatives had made a joint study of the alleged health hazard.

It is important to note that, according to the union, questions involving health hazards are not included in the Ford contract and need not, therefore, be submitted to an umpire for decision. One possible result of the Ford openhearth dispute is, therefore, that the union may seek to define more clearly in its new contracts the handling of grievance cases involving working conditions.

A promising aspect of Ford labor relations is the recent announcement that Dr. Harry Shulman will continue as umpire in labor disputes between Ford Mo-

tor Co. and UAW-CIO. Dr. Shulman had indicated a desire to resign last July.

A resident of New Haven, Conn., Dr. Shulman commutes between Yale University, where he is Sterling professor of law and his Detroit office. He became umpire after leaving his administrative post for the War Labor Board 3½ yr ago.

**T**HERE is no agreement among automobile executives as to the effect of the recent stock market break on potential sales of new cars. One motor executive who is inclined to discount the effects of the recent market recession is Paul G. Hoffman, president of Studebaker Corp.

Speaking before the American Management Assn. recently, Mr. Hoffman said that in his opinion the recent market decline reflects a lack of confidence by the investing public in its chance to make a profit in the market, but it does not necessarily reflect a decline in the public desire for goods. Hoffman added that 10 to 12 million new cars and trucks are needed to fill the present vehicle deficit and said that in his opinion the actual stock market effect on this demand might run about 10 pct.

"Unless we have something in the way of a catastrophe in this country," the Studebaker president said, "the only limitation on production will be the lack of industrial capacity to build motor cars and trucks."

Studebaker is now employing between 10,000 and 11,000 persons whereas the prewar average was 8000 to 9000 and the wartime peak was 17,000.

Studebaker's Commander series which has been absent from the automobile market since early 1942 was reinstated this week with the announcement of the 1947 models. This is a larger and more luxurious companion of the Champion and is characterized by a low silhouette but longer wheelbase than the lower-priced Champion. The Commander carries a 6 cylinder engine of 94 hp.

Four body-types are available including 2 and 4-door sedans, a 3-passenger business coupe and



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THE IRON AGE, October 24, 1946—71

a 5-passenger business coupe. The latter incorporates the so-called "Club Pullman" expanse of curved window glass. It will be some time before these new models are available to the public on a substantial scale.

**A**NOTHER automobile executive has spoken his piece on the subject of the productivity of labor. Harry J. Klinger, general manager of Pontiac Motor Div., said recently that absenteeism in Pontiac plants is higher than it ever has been and that employee turnover is at an all-time high. Steady work on the part of the individual employee and sticking to the job, he said, seems to be an old-fashioned idea.

"We don't know this year just how many of our employees will work during the deer hunting season and the bird season, but I will make a guess that unless things have changed, we may have a high percentage of our normal force off the job at that time."

Klinger's fears appear to be well justified. In one auto parts plant which normally employs 200 men only eight workers reported on the opening day of Michigan's bird hunting season.

The connection between meat prices and automobiles is not immediately apparent, but it is entirely

conceivable that one result of the removal of price controls on meat will be to cause an increase in the wage demand which CIO United Auto Workers are making on Chrysler Corp.

**W**HAT is most likely to happen is that this will be a dingdong negotiation that will eventually wind up short of a strike but with the union making some wage gains. With the longterm output for steel looming as probably the biggest question mark in future automobile production and steel deliveries being determined mostly on a historical basis, a recent compilation by Ward's Automotive Reports showing comparative production of the big three and the independents has considerable significance. The following tabulation shows total production of passenger cars for 1941 compared with the first nine months of 1946 for the various groups of the industry.

	Total, 1941	Nine Months, 1946	Per Cent of 1941
General Motors	2,291,275	666,789	29.10
Chrysler Corp.	1,068,350	508,490	47.60
Ford Motor Co.	1,098,865	489,540	44.55
Independents	650,502	431,638	66.33
Total Industry	5,108,992	2,096,457	41.03

If these figures reflect roughly the proportion of their steel quotas being received by automobile producers during 1946, it would appear that General Motors' chance

of obtaining an adequate supply of steel for the remainder of this year should be considerably better than either Chrysler or Ford and that the independents, which have out-produced the "big three" percentagewise during 1946, would be in the least favorable position with respect to steel. However, the fact that two independents have actually built more cars in 1946 than they did during the corresponding period of 1941 makes it necessary to temper such a conclusion with caution.

**A**T the present time few automobile executives are willing to express an opinion on steel supplies beyond the end of October. Their pessimism is readily evident and is shared, in many cases, even by district managers of steel companies in the Detroit area. Particularly pessimistic are steel users who in the past, have depended on smaller steel companies to supply a substantial part of their requirements. Ford is currently in this unfortunate position.

One optimistic note in the sheet steel picture this week was the announcement by Great Lakes Steel Corp. that next June will see an increase in the annual ingot capacity of that company. According to George R. Fink, president of the company, if delivery schedules are met as planned by midsummer next year a mill intended to increase the company's capacity of cold-rolled sheets by a half million tons is expected to go into operation. Because of the current shortages of automotive steel, the new addition to the Great Lakes facilities will be especially welcomed by the automotive industry.

## Says Registrations Of Cars Will Top 750,000

Detroit

• • • R. L. Polk & Co., Detroit statisticians for the automobile industry have predicted that 1946 new car registrations will pass the three-quarters of a million mark when all registrations for the month of August are compiled.

Total for 27 states comprising 38 pct of the U. S. population in August indicated that 66,574 new passenger cars were titled in these states. The total for the year has already reached 744,452.

**THREE IN A ROW:** Studebaker has introduced the postwar Commander a larger, more powerful, and more luxurious companion car of the low-priced 1947 Champion series which is receiving so much attention. Studebaker emphasizes individualistic body treatment. Note how the business coupe in the rear of the picture differs from the five-passenger coupe in the center while both differ from the four-door sedan in front.





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• Dept. of Justice says it is hamstrung in action against labor for restraint of trade . . . Can't stop boycotts under present laws.



**W**ASHINGTON — Recent overruling of the Wage Stabilization Board's refusal to grant demand of striking maritime workers makes it a matter of little importance whether the Board continues to exist or, like the time-honored Arab, folds its tents and fades out of the picture. It is a safe bet that from now on the rules of the game will be revised according to the expediency of the moment in granting wage demands which would not have been permitted under the old formula.

Disregarding a prospect of disastrous strikes unless a new round of wage increases is granted to offset mounting living costs brought about by previous wage hikes, the capitulation of the government to the strikers points out all the more clearly its growing subservience to organized groups. This growing impotence of the government in such matters emphasizes the desperate need for permanent, fair legislation which imposes equal responsibility on management and labor, thus setting up a genuine system of collective bargaining capable of settling their disputes without necessity of government interference.

One of the many lop-sided, not to say outright discriminating phases of existing legislation is pointed out by no less a personage than Attorney General Tom Clark

in a recent report compiled by the Dept. of Justice for the use of the special Senate Committee which is studying the problems of small business.

**"D**URING the past 30 yr," Mr. Clark declared, "about 675 anti-trust cases have been brought. The Anti-trust Div. has been generally successful . . . except in those (cases) involving restraints of trade by labor unions. The government has lost without exception the purely labor restraint cases which have been brought under the anti-trust laws, even though the jurisdictional strikes have been brought against other union groups certified after election under the National Labor Relations Act."

It was not until the immediate prewar years that the Justice Dept. leveled its big guns against the labor unions on the grounds of violation of the anti-trust laws. During the years 1939, 1940 and 1941, a 5-point crusade was inaugurated to determine if the unions were liable under the Clayton and Norris-LaGuardia Acts. The points of attack were:

Jurisdictional strikes; strikes to erect "tariff" walls around a specific area; refusal to work on or install prefabricated materials; made work, including requirement of more labor than necessary; and, agreements between employer and labor groups to fix prices on materials.

**"T**HE Department lost almost all the cases in the first four groups," Mr. Clark said, "the courts holding that as long as the unions acted in their own self interest and did not combine with nonlabor groups their activities were immune from prosecution under the Sherman Act although trade and commerce be restrained.

"In the fifth group, the courts held generally that the unions were liable if they aided and abetted employers' groups to achieve market and price control, even though the union's purpose in entering the combination related to terms and conditions of employment."

Two cases may be offered to il-

lustrate Mr. Clark's statement. The Hutcheson case was the first major defeat in the Department's trust-busting campaign against both the construction industry and labor practices. It grew out of a St. Louis jurisdictional strike between carpenters and machinists as to which should perform various types of construction work.

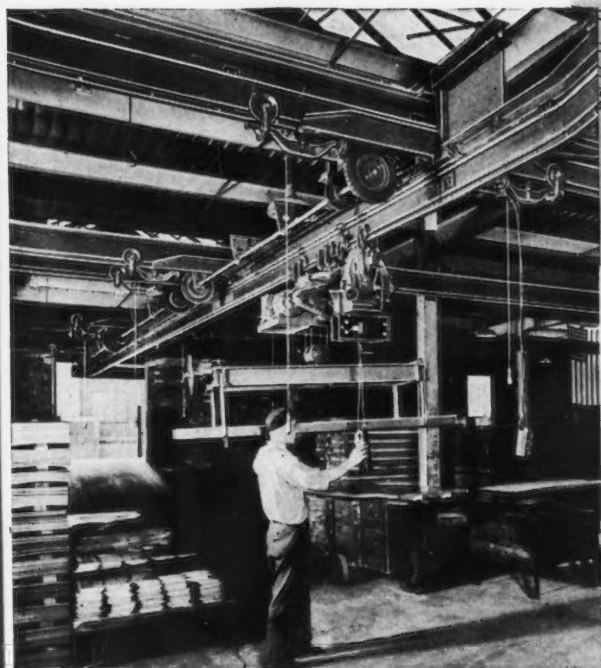
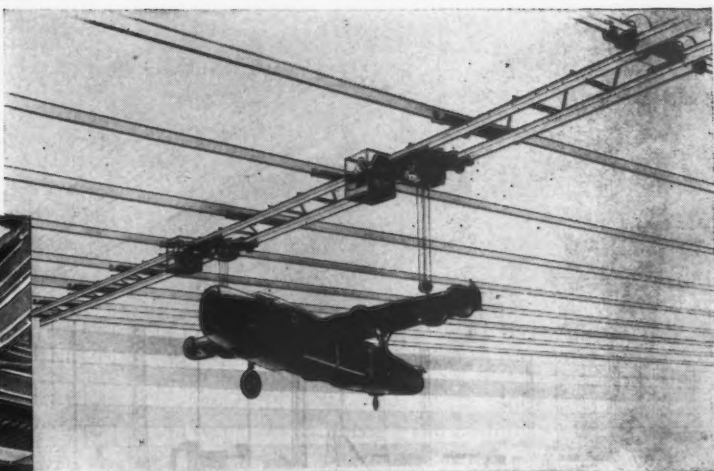
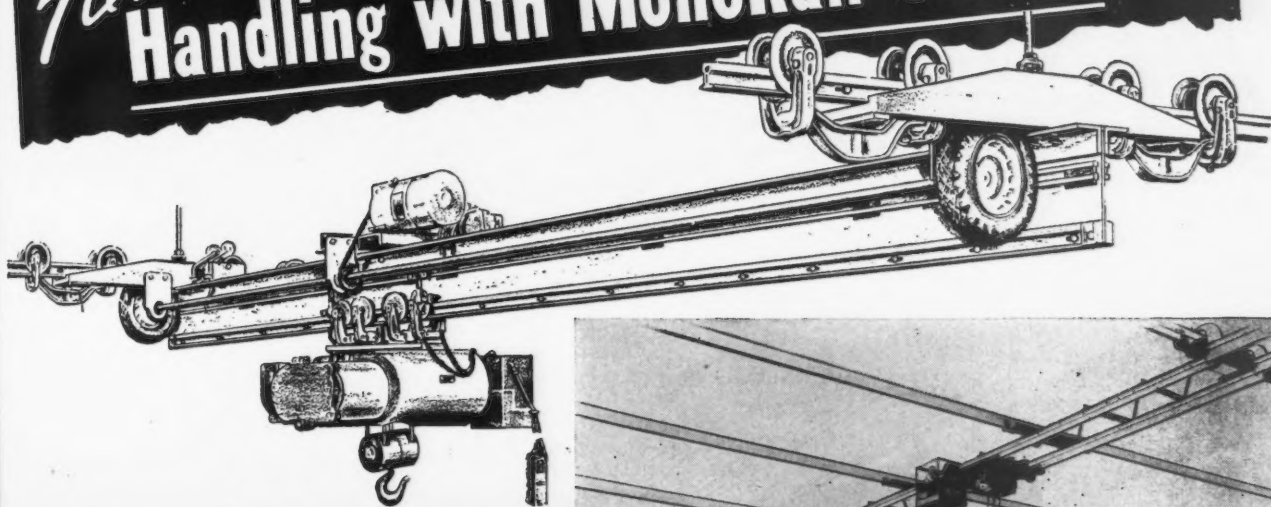
The controversy developed until it involved a sympathetic strike against the company and against other construction firms which were constructing other facilities for the company; boycotts were declared against the company's product and notices published to the effect that the firm was unfair to organized labor.

The case was decided against the Department despite its contention that in jurisdictional strikes the employer is powerless to protect himself for the simple reason that there is no concession he can make which will stop the attack on his business. In February 1941, the Supreme Court ruled that the strike was a labor dispute within the meaning of the Norris-LaGuardia and Clayton Acts and as such, therefore, did not violate the Sherman Act.

**I**N the other instance, the Allen Bradley case, the Supreme Court technically ruled that while a union acting alone may legally take actions which may impose restraints on trade, labor unions may not lawfully combine with nonlabor groups to achieve the same results. It was the first case since 1926 in which the Supreme Court has held labor union activity as violative in any way of the Sherman Act where such activity was related directly to terms and conditions of employment.

In the Allen Bradley case, local electrical unions were charged with having entered into closed shop agreements with local manufacturers and contractors in the New York City area. Under the agreements, the contractors were to purchase electrical equipment only from local manufacturers who operated closed shops and the manufacturers were bound to confine

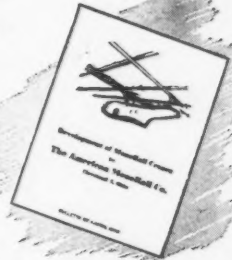
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sales to union contractors. The result was a complete monopoly for the three groups.

In its decision, in this case, the high court held that the unions were not entitled to exemption under provisions of the Clayton and Norris-LaGuardia Acts and were thus subject to the Sherman Act. The tribunal held that "Congress never intended that unions could, consistently with the Sherman Act, aid nonlabor groups to create business monopolies and to control the marketing of goods and services. . . . A business monopoly is no less such because a union participates, and such participation is a violation of the (Sherman) Act."

**T**HE net result of the decisions in all the labor cases brought by the Anti-Trust Div. of the Department boils down to the plain fact that none of the restrictive agreements involving a restriction in production, price fixing, allocation of markets and boycotts are "violative" of the Sherman Act if practiced by the labor unions alone. Even boycotts of plants where rival factions have won bargaining elections under the National Labor Re-

lations Act are not held to be restraints of trade within the meaning of the present conflicting statutes. In further comment on the Allen Bradley case, the Court stated frankly that:

"Our holding means that the same labor union activities may or may not be in violation of the Sherman Act, dependent upon whether the

union acts alone or in combination with business groups."

Complaints relating to these inequalities, as well as appeals for help against such boycotts, continue to roll into the Justice Dept. But, by self-admission, the government is as powerless to act as the firm which is being destroyed by jurisdictional strife.

### More Machinery Facing Loss of Priorities By CPA in Textile Field

Washington

• • • CPA has clamped down on three more types of textile machinery for which no more priority ratings will be granted, except in emergencies, until the supply more nearly approaches demand. This equipment includes buttonhole machines, button sewers, and 36 in. high post sewing machines for luggage. It was also ruled that manufacturers of this equipment may now sell up to half of their monthly output to nonpriority purchasers.

CPA said that its decisions are intended to support production by

enabling established concerns to replace worn-out equipment without priorities. In recent months many new machines have gone to small new concerns which held CC ratings.

Nearly all button sewers and buttonhole machines are made by the Singer Sewing Machine Co., CPA said. Similarly, all the high post luggage sewers are made by the Puritan Machine Works of Boston. Neither company was said to be able to produce more than a fraction of the machines it could sell on the present market.

Women's full fashioned hosiery machinery also is on the list of textile machines for which priority ratings are no longer given.

### New Appointees Plan Wire Cable Meeting

Washington

• • • The recently appointed 10-man subcommittee of the Wire and Cable Industry Advisory Committee which will devote its attention to braided flexible cords scheduled its first meeting for Oct. 24 at the OPA offices here.

The members of the subcommittee are:

Herbert W. Clough, Vice President, Belden Mfg. Co., Chicago; C. J. Craig, President, General Insulated Wire Works, Providence, R.I.; M. B. Dunsford, President, Lowell Insulated Wire Co., Lowell, Mass.; Ira S. Galkin, American Insulated Wire Corp., Providence, R. I.; Roy Gordon, Vice President, Diamond Wire & Cable Co., Chicago Heights, Ill.; L. W. Grotta, Manager, Hatfield Wire & Cable Co., Hillside, N. J.; C. W. Higbee, Manager of Sales, U. S. Rubber Co., New York; W. F. Osler, Jr., Vice President, Cernish Wire Co., New York; J. G. Riesman, President, Royal Electric Co., Pawtucket, R. I.; Frank Swayze, President, Whitney Blake Co., New Haven, Conn.

### THE BULL OF THE WOODS

BY J. R. WILLIAMS

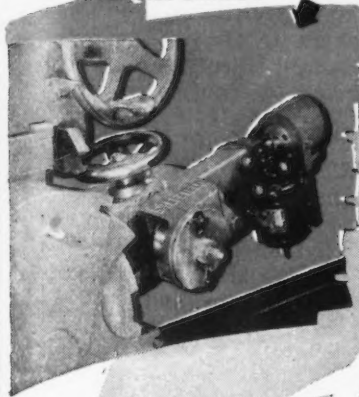




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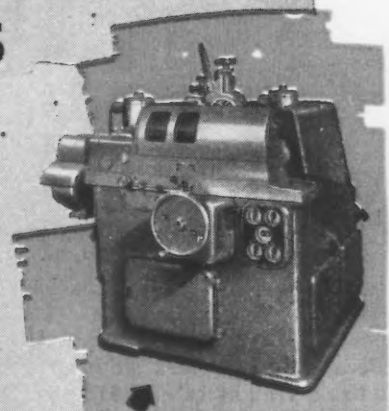
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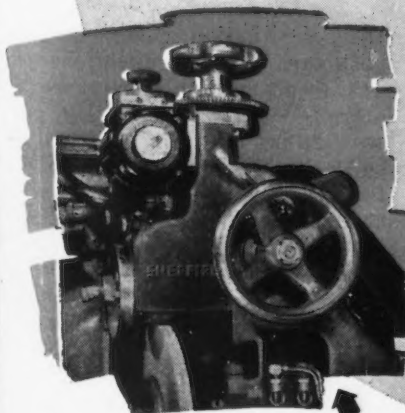
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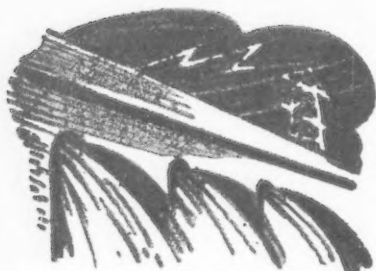
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# West Coast . . .

ROBERT T. REINHARDT

• **First Geneva basing point price gives little encouragement for "cheaper steel" . . . Bethlehem steps up Seattle production . . . Nonferrous mining industry feels it has been misled by government.**



**S**AN FRANCISCO — For the time being at least West Coast steel users see no possibility of cheaper steel with the establishment of Geneva as a basing point for sheared plates—\$2.675 per 100 lb delivered Geneva, Utah. Because West Coast shipments require a freight rate of \$12 a ton to West Coast basing points from Geneva, the steel company, until it convinces the ICC that an \$8 a ton freight rate is justified, must absorb \$4 a ton on any shipments to established Pacific Coast basing points.

Because of competition in the steel industry, Geneva plates will naturally be sold at the established West Coast basing point prices. Should the ICC approve the \$8 a ton freight rate from Geneva to the West Coast, then freight absorption to West Coast basing points would be unnecessary.

Should the West Coast pressure for lower steel prices result in a steel company reducing its price on the West Coast, obviously all other steel producers would meet such competition. Geneva is now in a position to match plate prices being quoted on the West Coast.

**T**HE formal announcement of the Columbia Steel Co., which is the subsidiary of the U. S. Steel Corp. in charge of sales of Geneva products, stated:

"Geneva Steel Co. announces that, effective Oct. 14, 1946, it has established Geneva, Utah, as a basing point applying to its sales of sheared steel plates within the range of sizes, grades, finishes and specifications currently produced at Geneva, Utah.

"The delivered price at Geneva, Utah, for sheared plates will be \$2.675 per 100 lb in carload lots; delivered prices to other destinations will be quoted upon request.

"Prices are subject to the seller's current list of extras, standard conditions of sale and are subject to change without notice. Shipments will be invoiced at prices and extras in effect at time of shipment, but such price shall not exceed the applicable maximum prices lawfully established by the Office of Price Administration and in effect at time of shipment."

Substantial tonnages of plates are being offered by WAA in the San Francisco bay area for \$2.55 per 100 lb in a sales which close Oct. 31 and Nov. 6.

**A**LTHOUGH rail shipments of steel to the Coast have been heavy because of the demand for speed, the long-drawn out maritime strike has bottled up considerable quantities of sorely needed steel according to users and eastern producers still in this market. No accurate estimate of the amount of steel being kept out of the hands of users because of the ship tie-up could be determined, but they range all the way from that of a steel-starved, strike-weary fabricator who moaned, "No one would believe the figures which would show millions of tons of steel held up by the maritime strike," down to that of H. H. Fuller, president of Bethlehem Pacific Coast Steel Corp. He reports that four ships from the East carrying 42,000 tons of steel are in Pacific ports and can't be unloaded because of the strike.

No one is willing to be quoted as to the total amount of steel being held up by the strike, but it is believed that a reasonable figure for the entire Coast would be approximately 80,000 tons. It is known

that a considerable portion of this tonnage is in nails and pipe badly needed for housing construction.

**S**HORTAGE of steel in this area continues to provide business for Western Union as the congressional committee carries on its campaign to force CPA or other government agency to pull sheets, nails and pipe out of a hat. The latest exchange of messages was a wire from John R. Steelman, OWMR, to Congressman Franck Havenner:

"We are now reviewing situation with Civilian Production Administration. We are aware of seriousness of problem and will make every effort to arrive at practical solution. We would be glad to discuss the matter in detail with you or someone else from the West Coast familiar with the situation."

And Mr. Havenner's reply which went also to President Truman and Messrs. Small, Porter and Wyatt:

"Steelman's telegram of Oct. 11 re Pacific Coast steel acknowledged. Purpose of sending agent to discuss Coast steel supply not entirely clear. CPA as agency charged with maintaining equitable distribution of critical materials has ample evidence of present inequitable distribution policy of steel producers. NHA as agent charged with responsibility for success of veterans emergency housing program, 20 pct of which is located on the Pacific Coast, is fully cognizant of degree to which Coast steel shortage impedes and will continue to impede housing program.

"Small business unit of Dept. of Commerce as agency responsible for interests of small business is well aware of the economic implications of inequitable steel distribution upon West Coast business. If agency which is finally responsible for obtaining relief for Coast industry is unaware of full facts, we suggest an immediate meeting of responsible representatives of those federal agencies charged with maintaining national economy on an even keel during the reconversion period. As spokesman in this matter for 17 members of California congressional delegation, I will be interested in knowing the specific steps to be taken to alleviate situation arising out of present policy of inequitable national distribution of steel mill products."

A little encouragement that ap-



# Vox Populi!



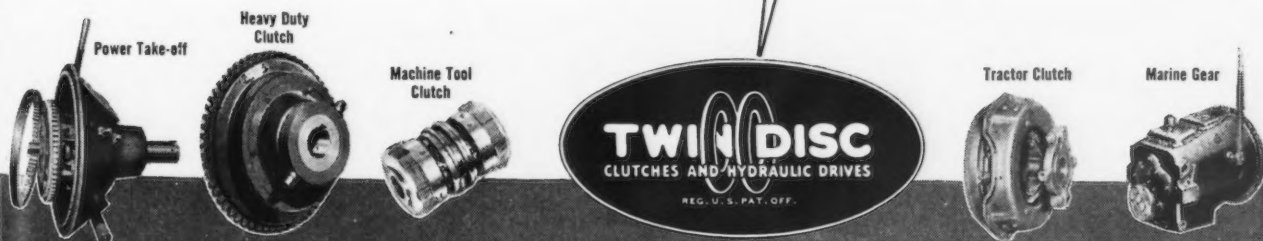
He sits in a four-walled office, but the happenings of the world are at his finger-tips, this editor of a great metropolitan daily. By telephone, telegraph, teletype, the news pours in, but long experience has taught him to sense the vital, to *select the significant* . . . to let his paper speak with the *voice of the people*.

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**SPECIALISTS IN INDUSTRIAL CLUTCHES SINCE 1918**



peals of westerners for more steel may be registering with government officials was derived from recent statements attributed to John D. Small that the steel shortage was "particularly acute" on the West Coast. Whether this awareness produces relief is yet to be seen.

**A**T least 60 tons of steel is moving out of this city this week in the shape of a monstrous dynamometer-truck built by the Knuckey Truck Co. for the Army Ordnance Dept. with the assistance of General Electric Co.

Built at an unofficially reported cost of approximately \$400,000 and under construction for 2 yr, this equipment is to supply the answers to questions concerning the power of Army tanks. At the Army Ordnance Proving Grounds in Aberdeen, Md., to which it will be shipped, this unit will be towed by heavy tanks, half-tracks and all types of wheeled combat vehicles.

Forty feet long, 11 ft wide and with a 26 ft wheel-base, the unit carries two 500 hp gasoline engine generator power plants each consisting of a Ford tank engine and a General Electric traction generator. Each generator supplies power to two electric traction motors which drive the four wheels (eight tires) through chain and sprocket. When functioning as a dynamometer, load is provided by allowing the traction motors to act as electric generators. As the dyna-

nometer is towed by the vehicle being tested, electric power is generated and dissipated through electrical circuits in the form of 5880 ft of strip metal constituting resistors.

**S**EATTLE—Under the impetus afforded by a more abundant—though rapidly changing—labor supply, Bethlehem Pacific Coast Steel Corp. is now operating four of its five openhearth at capacity.

For several months, because of the impossibility of hiring adequate labor, operations were down to three furnaces. During this period two of the furnaces were rebuilt and operations schedules are now at a high level.

Since the war it has been difficult to recruit openhearth workmen, it is reported, and while today this situation is reversed the turnover is abnormally high. The same condition is reported in other local industries and after a few months training it is not unusual for the paymaster to receive a letter from an absentee stating: "I'm now in Oshkosh, please mail my check to above address." Obviously, production efficiency cannot be maintained under such conditions, but no one seems to have the solution to the problem.

As with many producers, scrap is becoming more and more scarce here and Bethlehem is eating into its reserve.

**S**ALT LAKE CITY—The non-ferrous metal mining industry, still a bit groggy from strikes, manpower shortages, rising operating costs and governmental directives, has had its spirits knocked down a few more notches by the quota committee, which passes on premium price payments.

Some operators have already been notified that premium price adjustments cannot be made to absorb retroactive wage increases if the profit position of the company is such as to permit it to absorb the increased cost. The operators regard this as a "below the belt" blow and are bitterly protesting to John R. Steelman.

Premiums and retroactive pay increases was one of the issues which delayed settlement of the strike covering the first half of the year. Thereupon the Office of Economic Stabilization lifted ceiling prices on the metals and made other adjustments to encourage acceptance of the board's recommended wage increases. Announcements were issued indicating that premium adjustments would also be made to absorb retroactive as well as wage increases for the future.

Skeptical operators were not satisfied with promises which appeared to be official and held out for a commitment in writing. On June 7, 1946, Chester Bowles sent letters to major companies stating that under the government interpretation of OES release No. 34, mine operators would be "entitled to reimbursement by the government to cover retroactive wage payments made by the mine operators to employees at the mines." The letter further stated that they would be entitled to reimbursement for increased costs at their own mills or increased charges made by custom mills and smelters because of retroactive wage settlements.

Armed with this, plus a commitment in the OPA extension act that the premium price plan would be continued on terms "not less favorable than formerly," the operators concluded the question was resolved and signed new wage contracts.

But the first application for such an adjustment from this area has been denied on the grounds that the company's margin of profit has been adequate to permit it to absorb the increased cost.

**TANK TESTER:** Equipped with two 500-hp gasoline engine-generator power plants and weighing 60 tons, this huge truck was developed by Army Ordnance in cooperation with the Knuckey Truck Co., San Francisco, and General Electric primarily to test drawbar pull of Army tanks.



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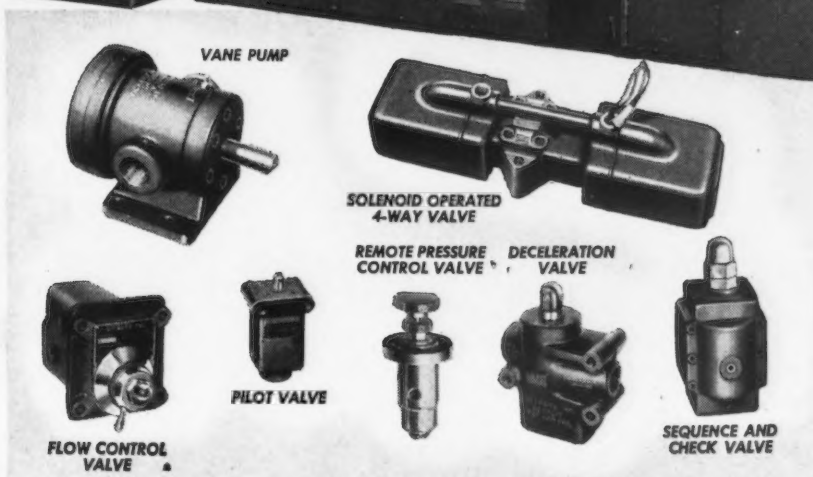


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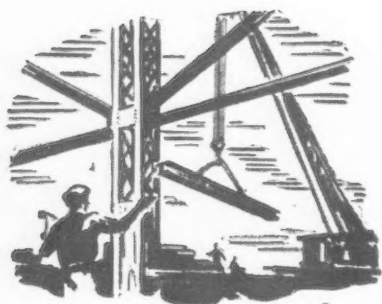


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# European Letter . . . JACK R. HIGHT

• Labor Government brought face to face with closed shop issue . . . Prefabs gain wider recognition in British housing as first orders prove successful.



**L**ONDON—The English people, being the proud possessors of a shiny year old socialist-labor government, are discovering that the new toy, is not without its pathos, and is productive of some situations that sound offhand to be almost ludicrous. An outcrop of embarrassments of varying degrees is calling attention to what may be one of the major headaches to the present regime—the relationship between the government and organized labor under such a government as exists here today.

What with an abnormally abundant crop of normal postwar vexations, including low productivity of labor, scarcity of raw materials, oppressing tax burden and a dominant nationalism in important overseas possessions, it would seem that by the simple expedient of putting labor in power the labor-government-management triangle had at least been laid aside.

A spate of the unauthorized strikes that are familiar in America have been the first foreboding of more serious problems to come. By local standards they have been too frequent, too wide-spread and too damaging. They have, in the past year affected the dockyards, the automobile industry, gas production, food distribution and many others. With the exception of the

protracted dockyard strike, they have nearly all been settled in what by 1946 American standards can only be called prompt dispatch.

The most threatening situation on the horizon is the future of the progressively more insistent demands by certain unions for a closed shop. This issue is being pressed at the moment by the huge Transport and General Workers' Union in a dispute in the London transport system. Faced with the threat of a strike that would halt London's buses, subways and streetcars, the London Passenger Transport Board bowed to what appeared to be the inevitable, and accepted closed shop provisions for certain classes of workmen. A test case is now in the courts, in behalf of 12 men who belong to a rival union and whom the board is attempting to discharge. The immediate issue may be solved for this case, but a broader decision on the whole question is awaiting some form of government leadership.

**T**HE prime cause of embarrassment recently was the trial balloon announcement in the press that the coal miners were scheduled to get an extra meat ration. Coal production being one of the festering spots in the British postwar economy, there is a distinct public interest in the efforts that have been made to increase output. From a prewar position as one of the world's important coal exporters, Britain has sunk to a position where she is facing a serious coal shortage for domestic uses this winter (there have been some limited exports).

There are those pessimists who say that Britain will never again be a coal exporter of note, but observers close to the industry are somewhat more encouraging, and feel that production in this basic industry will improve. What effect the government's nationalization of the mines, now officially enacted, will have on the production rate remains to be seen.

In an effort to increase the present output, the government has hinted to the London press that an extra meat ration would be

granted to the miners. The present ration allows everyone 26¢ worth of meat per week (the government subsidies are heavy and food prices usually extremely low by American standards), and the theoretical proposal was for the miners to get about 50 pct increase.

If the announcement was a trial balloon, it seems certain that the hue and cry from the other unions has been loud enough to convince the government that it cannot be done. There were immediate demands from the iron ore miners, and the steelworkers, and several other heavy industry groups that they too should have an extra meat ration. While it might have been possible for the government to find the extra meat to give to the miners without cutting the normal ration, they certainly cannot answer all of the demands.

The tough part of these situations is that they develop in the organized labor groups from which the government should be finding its staunchest support. The Prime Minister must stand or fall on the economic recovery of his country, and he must carry out his party program, and he must keep the unions happy or he will have no party.

**A**FTER a more modest beginning, British reluctance to accept "non-traditional," i. e. anything but good solid brick houses, is being further watered down by the government's official acceptance of 10 prefabricated types.

Despite the criticism of the opposition press, which dubs the prefabs "the houses nobody wants," Mr. Aneurin Bevan, the Minister of Health, who directs the housing program, has announced, "Sufficient experience has been gained of the building of non-traditional houses for it to be evident that they have considerable advantages at the present time. Not only do they make less demand than traditional houses on certain scarce building materials, and on some types of skilled craftsmen, such as bricklayers, but they also can be erected more quickly."

One of the scarce building ma-



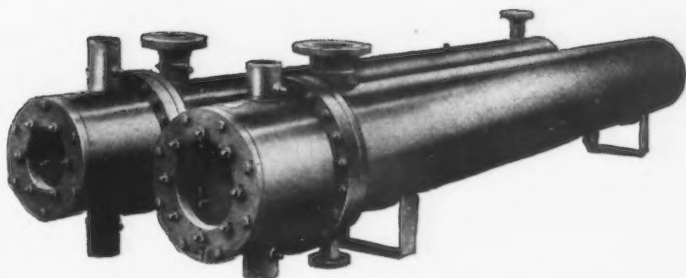
It's the **FINAL COST** that counts

...keep it low with non-ferrous **NICKEL** alloys

## CUPRO-NICKEL

### No Tube Deterioration Indicated after 6 Years of Service

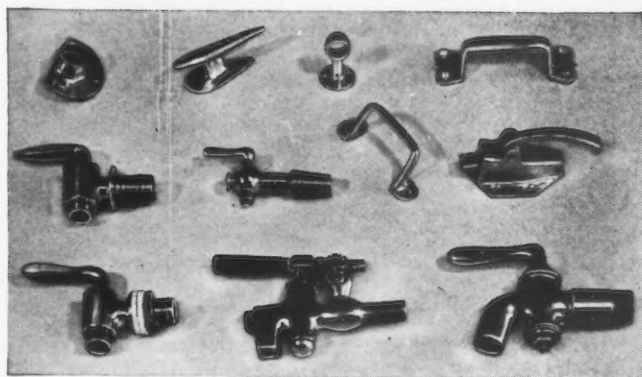
In these feedwater heaters, thin tube walls of .065 gage Cupro-Nickel permit high and rapid heat transfer at working pressures up to 900 pounds p.s.i. Hairpin bend U-tube units of  $\frac{5}{8}$ " O.D. Anaconda Cupro-Nickel Tubes indicate no deterioration after serving 6 years. Characterized by high strength at operating temperatures, along with sturdy resistance to erosion and corrosion, Cupro-Nickel renders economies in applications throughout industry... just as it does in these heaters built by Struthers Wells Corp.



## NICKEL SILVER

### A Metal Combining Beauty with Practical Durability

The beauty of solid Nickel Silver impresses one instantly. Essentially white in color, Nickel Silver possesses strength as well as corrosion-resistant properties superior to the usual brasses. It is a metal that may be cast and worked by simple methods. Available in extruded, rolled, drawn and cast sections, this Nickel alloy lends itself to countless applications. A few items produced by the National Brass Works of Los Angeles, Calif. in 20 percent Nickel Silver, are shown at right.



## NICKEL-BRONZE

### A Little NICKEL Imparts Strength and Toughness

Only 2 percent of Nickel gives these gear rim blanks and transformer case castings what they need. Nickel improves the strength of standard bronzes and is particularly effective in raising elastic properties... increasing shock-resistance as much as 25 to 50 percent. Moreover, Nickel increases castability... thus it helps to reduce losses due to mis-runs and affords a widened casting range. The photograph shows Nickel-Bronze castings produced by the Philadelphia Bronze & Brass Corp.



Over the years, International Nickel has accumulated a fund of useful information on the selection, fabrication, treatment and performance of alloys containing Nickel. This information and data are yours for the asking. Write for "List A" of available publications.

**THE INTERNATIONAL NICKEL COMPANY, INC.** 67 WALL STREET  
NEW YORK 5, N.Y.

terials that the Minister is certain to be referring to is bricks. The brick house building program received a rude shock when it discovered that the ministry had forgotten that bricks would be required in large quantities, and the program of reopening the brick works and obtaining imports has not yet overtaken the effects of the original snafu.

**S**UBSTANTIAL programs are already under way here for the production of two types of prefabricated permanent houses, as well as several that are designated as temporary. The two permanent types are the British Iron & Steel Federation steel houses for urban areas and a concrete type for rural areas.

To keep costs within the narrowest limits, the houses are being offered on a regional basis, and will not be cross-shipped into a zone where another type is being produced. The plan for each calls for a three bedroom house with living room, kitchen and bath.

The types of houses which are included in the new program are

listed below. All of these houses will get a special subsidy from the British Government to cover their higher production costs compared to brick building.

(1) *British Steel Construction*: Large precast foamed slag units, faced with clay tiles.

(2) *Cussins*: Steel frame, clad with concrete slabs faced with clay tiles.

(3) *Dyke C. C. C.*: Reinforced concrete frame clad with large precast concrete panels.

(4) *Easiform*: Concrete walls cast on the site.

(5) *Orlit*: Precast concrete frame structure with precast concrete floor and roof beams.

(6) *Scottwood*: Resin-bonded plywood glued to timber studding.

(7) *Steane*: Steel frame clad externally with composite concrete and clay tile panels.

(8) *Unity*: Composite frame of reinforced concrete and steel, clad with precast concrete slabs.

(9) *Wates*: Precast concrete panels.

(10) *Wimpey "No-Fines"*: Walls cast in "No-Fines" concrete on site.

In the eighth of a series of monthly housing reports the Minister of Health is able to show an increase of 11,681 houses for the month of August, following a July production of 10,395. The total of houses completed since VE-Day stood at 72,133 at the end of August, of which about 65 pct were temporary types. The government lists 179,000 units under construction, but this figure did not increase as rapidly in August (16,373) as it did in July (19,177).

**K**EY reply to the squatting movement which I have mentioned here previously is in the total number of people housed on some basis or other during the month, whether by building, conversion to apartments, or whatever. In this category, about 20,000 families achieved the ultimate, a roof over their heads. This figure compares with 14,500 for July.

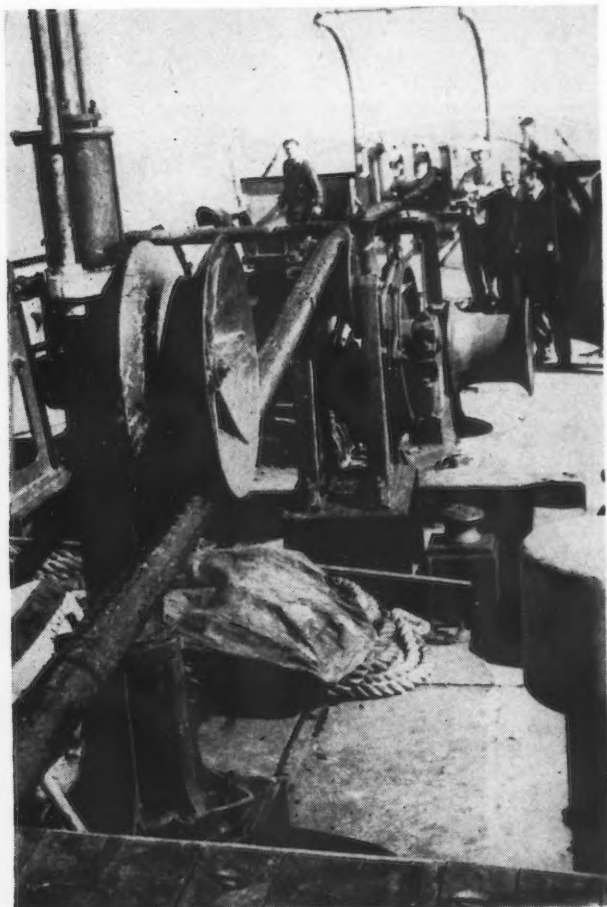
The wrangle which rages eternally on the issue of private building v. local government building, but the government has the upper hand here and does not intend to relinquish it. The ratio is intended to be four council houses to be built for rent to every one private house to be built for sale. This means that the municipal governments over here are going into the real estate business in a big way, and there are many growing pains yet to be experienced.

Plans for factory extensions and new construction are just as carefully controlled by the Board of Trade as housing is by the Ministry of Health. At the first of September, 2090 separate projects had been approved for the United Kingdom at a total estimated building cost of \$336 millions.

The different plans are carefully divided into those which are to be located inside the government approved "development areas," principally South Wales and Scotland, where unemployment pockets exist or threaten. Such projects get the priorities, 347 of them are now reported to be under construction and 23 have been completed.

\* \* \*

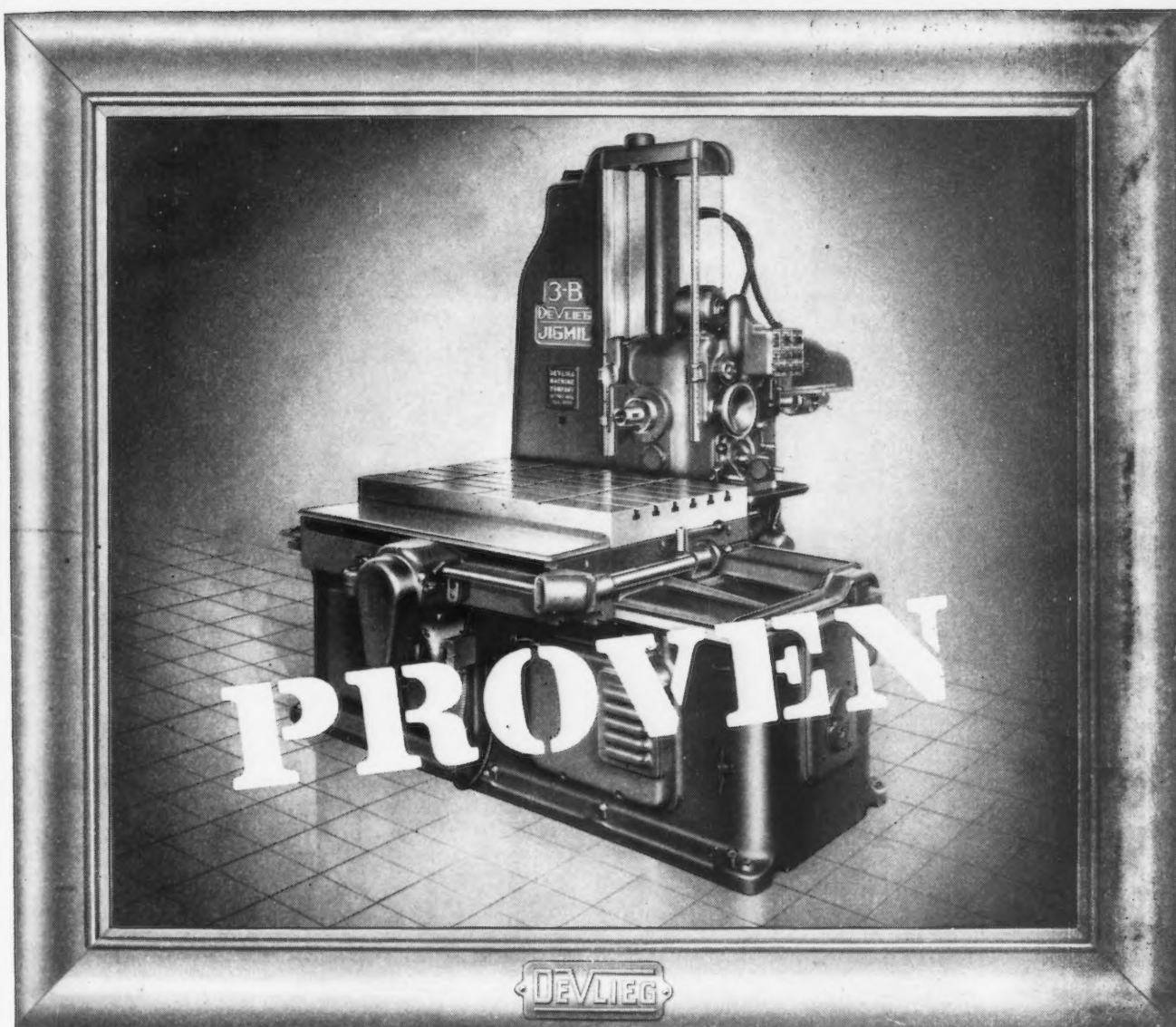
The Italian Government has announced a new national wage policy providing increases of from 35 to 50 pct after months of bitter haggling. The agreement calls for a 6-months truce in wage disputes, an essential to the strife-ridden Italian economy.



OPERATION OTULP: Scene in Southampton as one of the pipelines in the Pluto project is picked up from the bed of the English Channel. These lines carried a million gallons of fuel daily to the Allied armies on the Continent. It is expected that about 10,000 tons of lead will be salvaged as the lines are reeled in on cable ships like the one shown here.



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## *The World's Finest Boring and Milling Machine*

THIS new model 3-B JIGMIL has automatic power means to position the spindle from one location to another accurately to within much less than .0001 (one-ten thousandths part of an inch). Thus, extreme laboratory accuracy is conveniently available with ordinary skill that would normally make such precision very high in cost. This, and many other refinements, go further to prove that the JIGMIL Idea is a totally new approach to the problems of precision boring at a new low cost.

**DEVLIEG MACHINE COMPANY**



**450 FAIR AVE. FERNDALE 20,  
(Detroit) MICH.**



• **D. E. Fiore** has been appointed chief engineer at the Portsmouth Steel Co., Portsmouth, Ohio. He was formerly with Morgan Engineering Co., Alliance, Ohio.

• **H. B. Higgins** has been elected a director of Crucible Steel Co. of America, New York. Mr. Higgins is president of the Pittsburgh Plate Glass Co.

• **Phillip E. Sharr** has been appointed superintendent of the Pittsburgh Plate Glass Co.'s alkali producing plant at Bartlett, Calif. The new superintendent has served as chief engineer at the west coast plant for the past year. Mr. Sharr has been associated with the Columbia Chemical Div. for the past 9 yr. He was in charge of the planning department at the Barberton, Ohio plant at the time of his assignment to the Bartlett plant. As superintendent of the west coast plant, he succeeds G. B. Dub who has resigned.

• **George H. Kaiser** has been appointed district sales manager and is now in full charge of the Columbia Tool Steel Co.'s warehouse in Cleveland. Mr. Kaiser joined the Columbia sales staff in 1930 and since 1942 has been sales manager of the Chicago district.

• **Edgar T. Obenchain** has been named director of purchases of the National Gypsum Co., Buffalo, to succeed the late **Harold Drake**. Before joining National Gypsum, Mr. Obenchain was with U. S. Gypsum Co.

**EDGAR T. OBENCHAIN**, director of purchases, National Gypsum Co.



## PERSONALS

• • •

• **J. V. Schrock**, assistant to the general superintendent of the Pittsburgh Works of the Jones & Laughlin Steel Corp., has retired after 23 yr service with the corporation. Mr. Schrock started with J&L in their Pittsburgh Works accounting department. In 1929, he was made assistant to the general superintendent. Prior to coming to J&L, he was associated with the Carnegie Steel Co. for 28 yr.

• **Robert W. Breckenridge** has joined Automatic Die & Products Co., Cleveland, as vice-president. He was formerly secretary and general manager of Breckenridge Machine Co., and following the acquisition of Breckenridge Machine by Joy Mfg. Co., he had served as assistant general manager of the Breckenridge Div. of Joy Mfg.

• **Carl A. Lindblom** has been appointed chief engineer for the White Motor Co., Cleveland. He was formerly chief engineer for the Volvo plant at Bothenborg, Sweden, which he joined in 1938 following association with General Motors Corp.

• **Harry A. Campbell** has resigned from the position of director of research of Solar Aircraft Co., San Diego, a post which he has occupied for more than 7 yr. He is succeeded by **Dr. Merritt A. Williamson**, who was recently discharged from the Navy. He will head the technical research department, assisted by **Dr. John A. Southard**, in charge of process control, and **Ralph V. Hilkert**, chief metallurgist, in charge of metallurgy.

• **Cornelius C. Coakley** has been appointed Buffalo plant manager of the National Aniline Div. of the Allied Chemical & Dye Corp., succeeding **Leon A. Piguet**, who has retired but will remain with the company in an advisory capacity. Mr. Coakley, who joined the company at Marcus Hook in 1917, has been area supervisor of operations and assistant plant manager in charge of engineering, construction, maintenance and power.

• **John Madden** has been elected vice-president of James B. Clow & Sons Co., Chicago. **Guy P. Clow** and **G. Warren Whitney** have also been named vice-presidents.

• **Charles E. Soeder** has been named controller of Soss Mfg. Co., Detroit. Mr. Soeder was formerly division comptroller of Holley Carburetor Co.

• **Earl E. Morgan** has been appointed general superintendent of the Sawhill Mfg. Co., Sharon, Pa. Mr. Morgan has been affiliated with the National Tube Co. for the past 10 yr as chief industrial engineer, Lorain works, Lorain, Ohio, and had previously been employed as an industrial engineer with the U. S. Rubber Co.

• **Duncan S. Campbell** has been appointed field engineer of the Illinois Tool Works, Chicago. Mr. Campbell was previously shop superintendent of the American Gear & Mfg. Co., Chicago. Prior to that, he was a gear engineer at the Fuller Mfg. Co.

• **Verne E. Van Saw** has been appointed factory manager of the farm equipment division of Graham-Paige Motors Corp., Detroit.

• **E. A. Irwin** has been appointed general sales manager of the E. W. Bliss Co. Mr. Irwin had been the managing director of E. W. Bliss Co. of Canada Ltd., for the past 5 yr, and has been associated with the company for 27 yr. He will be located at the company's executive offices in Detroit.

**E. A. IRWIN**, general sales manager, E. W. Bliss Co.



## PERSONALS



**CHARLES E. GIBSON**, manager, claim department, Republic Steel Corp.

• **C. H. Guy**, manager of the claim department of Republic Steel Corp., Cleveland, has retired. Mr. Guy was chief inspector at Youngstown Sheet & Tube Co. for 13 yr prior to joining Republic in 1928. **Charles E. Gibson**, assistant manager of the claim department, has been named manager, succeeding Mr. Guy. Mr. Gibson was employed in 1923 by Trumbull Steel Co., Warren, Ohio, which was merged with Republic in 1930. **F. A. Behner**, who was assistant chief metallurgist of the Corrigan-McKinney Steel Co. prior to its merger with Republic in 1935, has been named assistant manager of the claim department. He has recently been working for Republic as a metallurgical assistant in Detroit. **D. W. Livingstone**, who has been in the claim department since its formation in 1928, has been named assistant to the manager of claims.

• **Herbert C. Geittmann** has been appointed plant engineer of the Phosphor Bronze Smelting Co., Philadelphia. Upon his release from the Army, he was acting in the capacity of special sales engineer for the Standard Steel Works Div. of the Baldwin Locomotive Works, Chicago.

• **Bernard R. Armour**, president, Hayden Chemical Corp., has been elected chairman of the board of the American Potash & Chemical Corp., New York. Mr. Armour succeeds **W. J. Froelich**, recently resigned.

• **Neil McElroy** has been elevated to the position of vice-president and general manager of the Procter & Gamble Co., Cincinnati. He has held the position of vice-president and since last March has served as assistant to the president. In 1943 he was elected to the board of directors.

• **Ned Landis** has been named branch manager of the Syracuse, N. Y. office of the Allis-Chalmers Mfg. Co., Milwaukee. Before joining the Navy, with which he served for 5 yr, Mr. Landis was associated with the Cincinnati office of Allis-Chalmers. At Syracuse, he succeeds **Leonard R. Reid**, who has been with Allis-Chalmers since 1935 and who is now attached to the electrical department at the company's main works.

• **H. Harman Rauch**, who has been associated with the Wisconsin industrial commission since 1934, has been made vice-president and director of the newly created department of human relations at Geuder, Paeschke & Frey Co., Milwaukee.

• **Eugene C. Bosl** has been appointed sales representative of the Hanson-Van Winkle-Munning Co. He is located in the Milwaukee office of the company.

• **W. O. Kupper**, formerly manager of southern sales for the fittings division of the Ladish Drop Forge Co., has been appointed manager, middle western sales with headquarters in Chicago.

• **G. A. Shallberg, Jr.** has been appointed advertising manager of the Borg-Warner Corp., Chicago. He was recently discharged from the U. S. Army.

• **Harry F. Gracey** has been appointed training director of SKF Industries, Inc., Philadelphia. Mr. Gracey, who will have charge of SKF's factory-wide organizational development program, was formerly in charge of the industrial, foreign trainee and engineering student training programs of the Victor Div., Radio Corp. of America.

• **James McMillan**, general manager of the Detroit & Cleveland Navigation Co., has been elected to the board of directors of the Packard Motor Co., Detroit.



**S. T. JAZWINSKI**, chief metallurgist, Barium Steel Corp.

• **S. T. Jazwinski**, English metallurgist, has been appointed chief metallurgist of Barium Steel Corp., New York. Mr. Jazwinski, prior to his new association, was chief metallurgist of K & L Steel-founders & Engineers, England. As chief metallurgist for Barium, he will devote his attention to custom relations, technological research, improvement and expansion of production facilities of the corporation's 12 subsidiary companies.

• **August J. Scheffler**, who has been with the Utility Mfg. Co., Cudahy, Wis., for more than 30 yr, has been elected president to succeed the late **Edward Hutchens**. **E. J. Hutchens**, son of the late president, has been named vice-president and **Mrs. Sophie Dunn** was re-elected secretary.

• **S. S. Bruce** has been appointed to the newly created position of executive sales representative in Washington for Koppers Co., Inc. Mr. Bruce has been associated with Koppers since 1916 and has been traffic manager since 1921. Recently he was named manager of the traffic and transportation department. His new appointment is effective Nov. 1. **John B. Keeler** has been named to succeed Mr. Bruce as manager of the traffic and transportation department. Mr. Keeler has served as assistant traffic manager for Koppers since 1928, and recently was named assistant manager of the traffic and transportation department.





**C. R. DOBSON**, whose appointment as vice-president in charge of operations of H. K. Porter Co., Inc., was announced in the Oct. 17 issue.

• **Alvin E. Klein**, plant engineer at the wartime airplane modification center of Bechtel-McCone Corp., Birmingham, has been named president of the Acme Machine & Fabrication Co., Inc., Birmingham.

• **Lawrence L. Jones** has been appointed superintendent of General Electric Co.'s new factory for the manufacture of glyptal alkyd resins at Anaheim, Calif. Mr. Jones has been located at Schenectady where he has served as a foreman in the varnish section of the resin and insulation division since 1935.

• **Thomas B. Tomkinson**, controller of the B. F. Goodrich Co. since 1927 and a director from 1928 to 1940, will retire Dec. 31. He has completed 43 yr of continuous service.

• **Major Meredith Poole**, 65, purchasing director for E. C. Atkins & Co., Indianapolis, died recently. He was associated with the company 46 yr.

• **Robert S. Drummond**, president of the National Broach & Machine Co., died recently in Detroit. He was formerly associated with Detroit Steel Products Co., and was in charge of manufacturing and sales for the Gear Grinding Co., before he founded the National Broach & Machine Co. in 1929.

• **Marvin Brown**, formerly a foreman of brick masons, has been promoted to superintendent of brick masons at the Gadsden, Ala. operations of Republic Steel Corp.

• **W. H. Bailey**, assistant manager, coke and by-product sales, Alabama By-Products Corp., Birmingham, has been promoted to manager of that department.

• **Clyde B. Colwell** has been appointed special representative for stainless steels of the Jessop Steel Co., Washington, Pa. He will make his headquarters at the company's Chicago offices, and will specialize in the sale of solid stainless steels, stainless-clad steels, stainless steel castings, heat resisting castings, and acid resisting castings. Mr. Colwell was formerly employed in the sales department of the Carnegie-Illinois Steel Corp.

• **George E. Smith** and **Wendell F. Grubbs** have been appointed representatives for the Philadelphia office, and **E. C. Kelly** for the Detroit office of Kennametal Inc.

• **Peter J. Fink** has been appointed service manager of the Young Radiator Co., Racine, Wis., and **Lloyd B. Smith**, special representative with headquarters at Bellevue, Wash.

• **A. J. Rosebraugh** has been appointed sales manager of the industrial radio division of Philco Corp. with headquarters in Detroit. He will be assisted by **Martin F. Shea**, who has been one of the Philco representatives in Detroit for many years. Mr. Rosebraugh joined Philco in 1929 and was recently southwest division manager for Philco with headquarters in Kansas City.



**GEORGE A. HAYS**, vice-president and general manager, Hinderliter Tool Co.

• **George A. Hays** has been appointed vice-president and general manager of the Hinderliter Tool Co., a division of H. K. Porter Co., Inc., at Tulsa, following the retirement of **Frank J. Hinderliter** who founded the company in 1920. Mr. Hays was formerly vice-president of Oil Well Supply Co., a U. S. Steel Corp. subsidiary. He had been associated with this company and its affiliates in various capacities since 1922.

• **H. A. Reda** and **D. B. Jones** have been appointed to the sales staff of Hall Laboratories, Pittsburgh, with headquarters in Detroit. Mr. Reda has been with the Carnegie-Illinois Steel Corp., and Mr. Jones was recently discharged from the Navy. **W. H. Weitzel**, service engineer for Hall Laboratories out of Detroit, will transfer to sales work in the same area.

• **John D. Martin**, 54, retired in 1939 as general sales manager of New England Coke Co., Boston, died Oct. 6. He was associated with the company 22 yr.

• **Evan N. Lewis**, 47, assistant superintendent of the Buffalo plant of Bliss & Laughlin, Inc., died Oct. 7 after an illness of 6 months. He had resigned as superintendent of the National Drawn Steel Co. to become general foreman of Bliss & Laughlin in Buffalo, and was made assistant superintendent in 1936.

## ...OBITUARY...

• **Emil C. Ducommun**, 68, president of the Ducommun Metals & Supply Co. of Los Angeles, died Oct. 9.

• **Frank H. Manley, Sr.**, 73, former treasurer of the Carborundum Co., died Oct. 6. He joined the Carborundum Co. at Niagara Falls in 1896 as a bookkeeper and retired as chief fiscal officer in 1942.



# This worm turns...



This worm turns to feed coal to furnaces. It is also used to convey other materials. Being made of stainless steel, it has a high resistance to corrosion, heat and abrasion. Though the first cost is higher, its greatly extended life makes it cost less in the end, less per hour of operation, less in shut-down expense. This complicated shape shows that almost anything can be done with stainless, which can be used to improve either plant equipment or consumer goods. If you think stainless fabrication requires special know-how, come to Rustless. For over 20 years we have done nothing but produce, study, develop stainless steels. Thus we know so much about it that we can show you how to machine, forge, weld, heat treat, electropolish it in your own factory, to your own standards. Just write Rustless Iron and Steel

Division, THE AMERICAN ROLLING MILL COMPANY,  
Baltimore 13, Maryland. Sales Offices in  
principal cities, distributors everywhere.

STAINLESS STEEL SPECIALISTS



# Dear Editor:

## DEPTH-HARDNESS GRAPHS

Sir:

In scanning by article, "Decarburization in Highly Stressed Steels," published in the July 4 issue, I was disappointed to find that the scale to which the depth-hardness graphs were redrawn does not coincide with the scale of the micrographs as noted in lines 10 and 11 of the text. Although depth-hardness curves are quite accurate in themselves, it was intended that they be of the same scale as the corresponding micros, in order to emphasize that decarburization effects extend to appreciably greater depths than are indicated visually.

In order to illustrate properly sectional hardness distribution, it would be necessary to expand the "depth below surface" scale approximately 117 pct, or to a point where 0.025 in. below surface is equal to 2.78 in. It is with regret that I mention this discrepancy in reproduction as the remainder of the article appears to be in excellent order.

P. A. HAYTHORNE  
Research Engineer

Lockheed Aircraft Corp.  
Burbank, Calif.

● We devoted a great deal of consideration, Author Haythorne, to the matter of the scale of the micros and the graphs in an attempt to present the curves on the original scale, but the make-up problem involved in accommodating the 62 illustrations of the article forced us to compromise. We felt that a reduction of the scale of the graphs, while not the most desirable procedure, would not alter the basic accuracy of the information contained therein.—Ed.

## FLAME SPRAYED PLASTICS

Sir:

Please send us five tear sheets of "Flame Sprayed Plastics" appearing in the Aug. 22 issue.

V. KINCAID  
Ammonia Dep't.

M. I. du Pont de Nemours & Co.  
Charleston, W. Va.

## SULPHITE-TREATED STEELS

Sir:

We have noticed a certain amount of literature on sulphite-treated free machining steels, but upon inquiry to our usual suppliers, we have not been able to secure any data on these steels. Can you advise us of any companies that are in regular production on these steels?

G. L. T. VOLLMER  
Chemical Engineer  
Canadian Drawn Steel Co., Ltd.

Hamilton, Ont.

● We suggest you contact the Wisconsin Steel Div. of International Harvester Co., 180 N. Michigan Ave., Chicago, which holds the patent rights for the production of sodium bisulphite treated steel.—Ed.

## NICKEL PLATING

Sir:

In the Aug. 8 issue we read with interest a brief description of "Nickel Plating Process" by A. Brenner and G. E. Riddell. We are interested in knowing if more detailed information is available on the subject for commercial application. Will you kindly advise us where we can obtain such information?

J. M. BROWN  
Director of Purchases

Veeder-Root Inc.  
Hartford 2

● The description of the process was an abstract of an article presented at the annual meeting of the American Electroplaters' Society. A copy of the complete paper may be obtained by writing to Dr. A. K. Graham, American Electroplaters' Society, Jenkintown, Pa., or you can get in touch directly with Brenner and Riddell at the National Bureau of Standards, Washington.—Ed.

## SIZING STANDARDS

Sir:

We are attempting to standardize sizing dimensions for brazing and soft soldering copper tubes. We have contacted several of the solder firms but haven't been able to obtain anything very definite from them. If you have any information on this subject we will appreciate your passing it along.

R. H. ARMSTRONG  
Manufacturing Engineer

Carrier Corp.  
Syracuse 1, N. Y.

● That's a new idea to us, but it certainly has merits. Do any other readers have comments on this thought?—Ed.

## HARDENABILITY REFERENCES

Sir:

Two references were made in the article, "Hardenability Test for Quenched and Tempered Steel," in the issue of Sept. 5, p. 62. One reference is (1) "Time-Temperature Relations in Tempering Steel," and the other is (2) "The Softening Rate of Steel When Tempered from Different Initial Structures." I would appreciate information as to where I can obtain these two articles.

W. LANGFORD  
Chief Metallurgist

R. G. LeTourneau, Inc.  
Vicksburg, Miss.

● The first article (1) appeared in Metals Technology, September, 1945. This journal is published by the American Institute of Mining and Metallurgical Engineers, 29 W. 39th St., New York 18. The second reference (2) was published in ASM Transactions (1939), Vol. 27, p. 1. This is published by the American Society for Metals, 7301 Euclid Ave., Cleveland. Photostatic copies can undoubtedly be obtained by writing the respective publishers, or through the Engineering Societies Library, 29 W. 39th St., New York.—Ed.

## CONTROLLED ATMOSPHERES

Sir:

We would appreciate it if you would forward us three copies of the article, "A Critical Survey of Controlled Atmospheres," by Funk and von Ludwig.

D. W. KAUFMANN  
Metallurgist

Crucible Steel Co. of America  
Syracuse 1, N. Y.

● Several tear sheets of the article are being forwarded. The C. M. Kemp Mfg. Co., 405 E. Oliver St., Baltimore 2, has prepared reprints of the three articles, the supply of which has been exhausted. However, a second supply is being reprinted and we are certain they would be glad to furnish additional copies if you write to Mr. Frank J. Kohut, general manager.—Ed.

## NEWSFRONT SOURCES

Sir:

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T. SENDZIMIR  
Vice-President

Armzen Co.  
Middletown, Ohio

● "Newsfront" is not, as many readers think, a summary of the highlights of the issue. Only a very few stories or articles appearing in THE IRON AGE are summarized in "Newsfront" each week. The bulk of its material consists of commercial, technical and political news, trends and developments reported by our editors and correspondents in the field. It is designed to give busy engineers and executives a quick, authoritative picture of trends and news affecting the metalworking industry. Often the information is limited, or sources cannot be disclosed — hence these items have no direct connection with anything else in the issue. However, we are always willing to go as far as we can in answering "Newsfront" inquiries.—Ed.

## PHOTOSTATS REQUESTED

Sir:

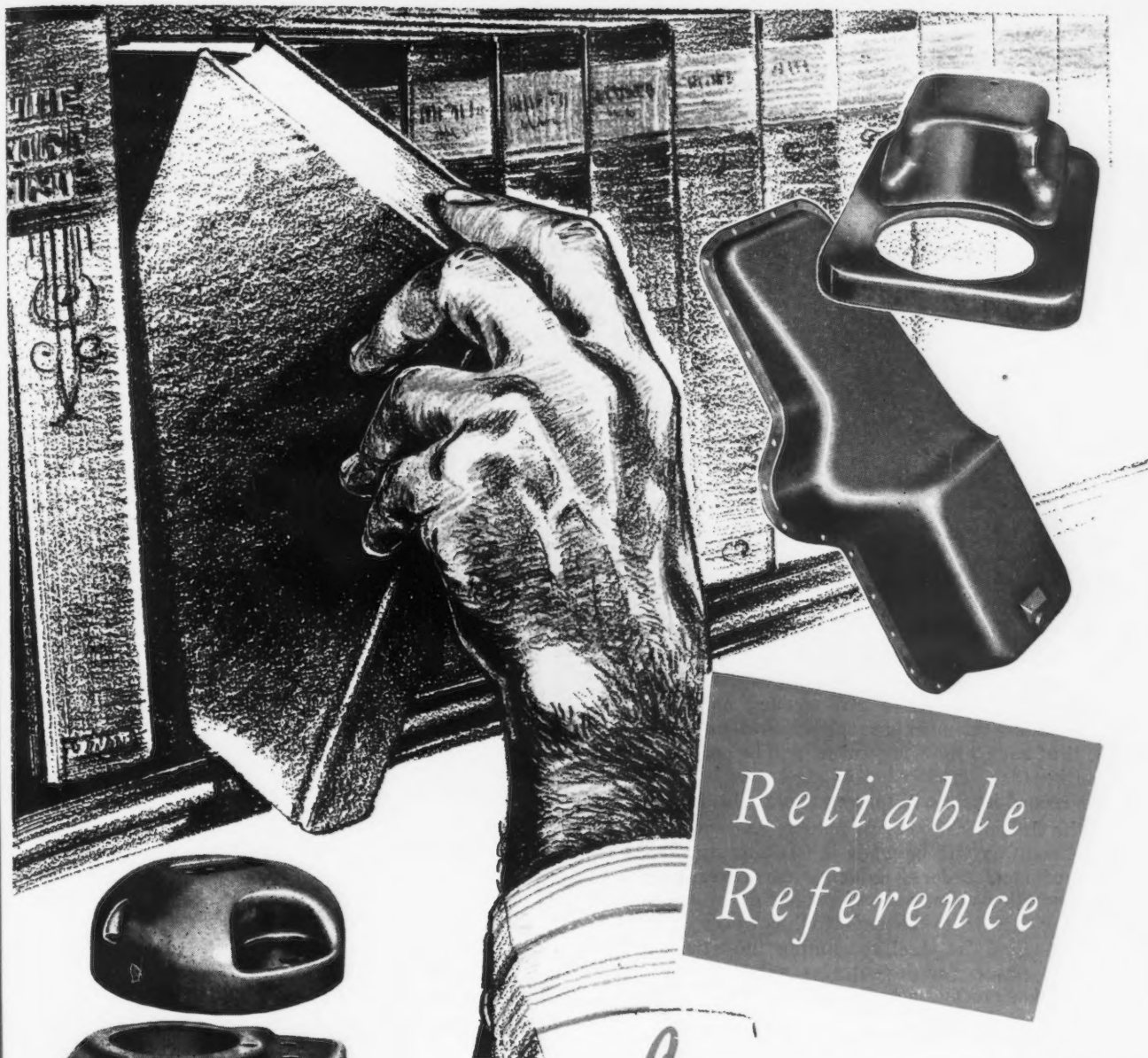
We have been requested to furnish one of our engineers with a photostatic copy of pp. 54 to 57 of Sept. 5 issue, "Selecting Nonferrous Bearing Material," also pp. 51 through 57 of the Apr. 18 issue, "Three-Wire Thread Gaging Simplified." May we have your permission to make these photostats?

C. A. ELLIS  
Supervisor,  
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# Industrial News Summary . . .

- **More Orderly Trend Seen in Steel**
- **Price Decontrol Prospect Is Hazy**
- **Coal Strike Would Hurt Steel Output**

**M**ANY steel customers in recent weeks, sobered by inventory figures and the probability that some potential demand figures for finished products were inflated, have eliminated their practice of attempting to obtain every pound of steel that is not nailed down regardless of what type of product it was.

While it is true that demand for steel products in general continues unabated, there is a trend among many manufacturers to build their production schedules on the basis of the availability of the "hard-to-get item" rather than to continue the policy of further unbalancing inventories by building up to dangerous levels products which are more easily obtained.

There is a good possibility that this trend in a more orderly steel market will assume much larger proportions over the next several months. Some manufacturers will be forced to give ground on some of their previous overoptimistic production goals. The net result of such a move, however, will be on the positive side because distribution of steel now being produced at record levels will take on a more healthy hue.

By the first of the year or shortly thereafter considerable headway will be made in cleaning up the duplication of steel orders, reducing carryovers which represent unfilled promises and paring down substantial backlogs. It is to be expected, however, that a large segment of the steel consuming industries will continue to order for inventories after production quotas have been met as a hedge against probable price rises next year.

**P**ROBABLY at no other time in steel market history is there less probability of unreasonable price advances than in the coming months. A decontrol of steel prices would find producers primarily interested in re-establishing a sound economical balance between the quotations of various products rather than a move for a general horizontal hike in prices.

It was apparent this week that some governmental officials charged with control of prices are in no hurry to carry out the implied intention rapidly to remove price controls contained in President Truman's recent talk on the decontrol of meat. It may be, according to some observers, that a reconvening of Congress will be necessary before alacrity becomes one of the main ingredients of OPA's price decontrol activity.

An important meeting between the Steel Industry Advisory Committee and the OPA on the general question of steel prices early this week gave little indication of an early decontrol of all steel prices. Even though total price control will be completely eliminated in this country long before what would have been the case had the administration not changed its course recently, it looked this week as if the steel industry may have to "sweat it out" before steel is established as a free market.

Steel products were among the first to go under strict price control and according to some views expressed in Washington OPA circles it may be one of the last to go off the list even though some items not considered to be critical may be removed from controls in the not too distant future.

Steel industry officials at the OPA meeting in Pittsburgh, however, filed resolutions suggesting the decontrol of all steel prices and also suggesting that the current cost study looking towards an increase in some items proceed at a swifter pace. The present price adjustment negotiations between the OPA and the steel industry which are now in their sixth week are already taking on earmarks of those of a few years ago which ran on and on.

Having produced voluminous steelmaking cost data on a product-by-product basis, the OPA is demanding additional material from the industry which will be quite time-consuming. All hope that the steel price situation with respect to certain low return items would be settled by the early part of December appears to be dashed for the time being at least.

**T**HE steel industry this week continues to turn out steel at the highest peacetime level in its history. Steel ingot output this week is up  $\frac{1}{2}$  point to 91 pct from last week's revised rate of 90.5 pct of rated capacity. Should a coal strike develop as a result of an impasse between the United Mine Workers and Secretary of the Interior J. A. Krug, it would not take long seriously to affect current steel production.

Grave concern has already been expressed by the steel industry as to the supplies of coal to be available during the coming Winter months. Although stocks on hand are not far out of line with 1945 inventories, the most significant factor is the emphasis on the steady production of coal rather than the inventories on hand.

The coal strike earlier this year aggravated the loss of steel sustained during the steel strike. Any prolonged tieup at the mines would again demoralize a steel market which is only now beginning to take on the aspects of a more normal distribution. Steel officials also are not unmindful of the current Detroit wage trends, the result of which may form a pattern for steel contracts which will be opened up for negotiations about the middle of January next year.

There is still no indication of an immediate buyers' market in steel as far as current demand for various products is concerned. Fabricators and some manufacturers turning out finished durable goods are, however, experiencing some cancellations and deferment of deliveries requests from their customers. The deciding factor as to whether or not this is passed back to basic steel producers may be governed by the type of lending policies followed by commercial banks.



• **NEW EASTERN MILL**—Plans for an eastern steel mill by the U. S. Steel Corp. are well advanced. Present indications are that a unit of 5 million ingot tons annual capacity will be installed. Three prospective sites have already been spotted in Delaware and New Jersey. The unit will have the advantage of using foreign ore for iron production and a close proximity to a heavy consumers market. A 2 yr survey has been made to obtain sources of iron ore supplies in Central and South America. When the plant is completed it will undoubtedly replace older equipment in the corporation's subsidiaries.

• **POTENTIAL AUTO DEMAND CUT**—The automobile industry seems to be scaling down estimates of unfilled orders. Some estimates of unfilled orders backed up by deposits on the books of automobile dealers have been placed at "upwards of 5 million." These estimates represent a sharp scaling down of optimistic guesses made at the end of the war when some appraisers placed the backlog of orders at from 12 to 17 million vehicles.

• **STEEL PAYROLL CLIMBS**—Total payroll, average employment and average hours per week in the iron and steel industry reached postwar highs during August, according to American Iron & Steel Institute. The total payroll for August, the largest since May 1945, was \$145,226,300 compared with \$137,988,900 in July. Average hours per week for wage earners within the industry rose during August to 38.5 from 36.9 the preceding month. Average number of employees climbed to 595,600 in the month of August compared with 585,100 in July. Hourly, piecework or tonnage workers in the industry received average hourly wages of 134.6¢ per hr during August, compared with 135.1¢ per hr the previous month.

• **BRITISH STEEL OUTPUT**—Steel production in the United Kingdom during September totaled 1,068,400 tons, compared with 1,078,300 tons in the same month last year. The decrease was due to a labor dispute in Scotland involving the furnace bricklayers. Pig iron output for September showed an increase with production totaling 659,900 tons against 624,000 tons for the same month last year. Steel production for the third quarter of this year amounted to 3,348,800 tons, compared with 3,076,500 for the same period in 1945 while the output of pig iron totaled 2,134,300 tons against 1,931,700 tons last year.

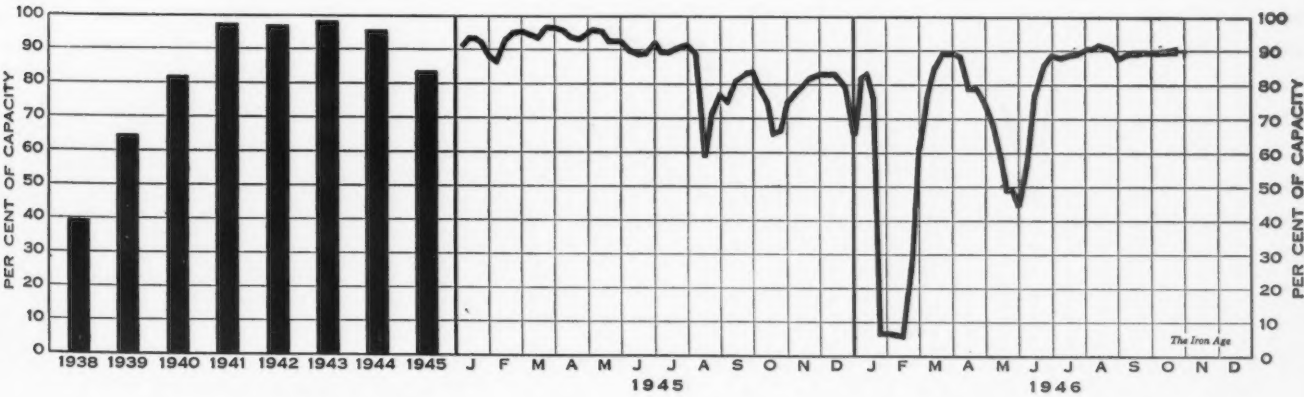
• **ROLLING TENEMENTS**—With a shortage of about 3000 workers, mostly in unskilled categories, U. S. Steel Corp. is using discarded Pullman sleepers as temporary housing units in the hope it will induce more workers into the plant. Eleven such sleeping cars are now located on the company's siding outside the Gary plant where the men are charged \$4.00 per week for a single bedroom or \$3.50 per two occupants. In addition, the corporation is looking for surplus Army barracks but have found that none will be available before Nov. 1. The Johns-Manville Corp., Waukegan, Ill., is using a similar setup as a temporary expedient for the housing shortage.

• **GEOGRAPHICAL CENTER**—The geographical center of the hot-rolled sheet and strip capacity of the steel industry is now the town of Seal, Wyandot County, Ohio, according to a recent calculation by the American Iron & Steel Institute. In 1938 the center of this capacity was located farther east in Richland County, Ohio. In almost all the states capacity was increased during the 8 yr from 1938 through 1945. The major increases took place in areas to the west of Ohio with the result that the center moved farther away from the Cleveland area, once considered the center of sheet and strip production. This capacity is now located in 21 states with the largest capacity in Ohio. Indiana comes next with Pennsylvania following and Michigan a very close fourth. The largest gains, tonnage-wise, were made in Ohio, Indiana and Michigan, in that order.

• **TWO MILLIONTH AUTO**—The 2 millionth motor vehicle to be produced in 1946 moved off the assembly line recently. It has taken the industry 39 weeks to reach this mark, while in 1941 only 17 weeks were required to produce 2 million vehicles. Approximately one-third of the first 2 million vehicles produced have been trucks and other commercial units. About 5 to 6 pct of passenger cars produced have been exported.

• **LCL CONTAINERS**—Pennsylvania Railroad has ordered 408 bulk containers, each to hold 8 tons, to speed delivery of raw materials to the steel industry. The containers will be built at the road's Altoona shops to be mounted on gondola cars. The containers can be handled by cranes to furnace floors where the units can be emptied through bottom doors which control the rate of flow.

Steel Ingot Production by Districts and Per Cent of Capacity



\* Revised.  
THE IRON AGE, October 24, 1946—93



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**TOUGH ASSIGNMENT:** Sir Andrew Rae Duncan, British Iron & Steel Federation head is in this country attempting to close a deal for 2 million tons of American steel, mostly semi-finished products.

## British Steel Head Seeks 2 Million Tons of American Steel

**New York**

• • • The shortage of steel ingots and semi-finished steel in Great Britain has become so serious recently that the British steel industry has sent its top man to this country to see if a personal visit can result in firm commitments for shipment of steel to Great Britain in 1947. This trouble shooter, whose job will be monumental, is Sir Andrew Rae Duncan, head of the British Iron & Steel Federation, who arrived in this country early this week on the Queen Elizabeth.

Sir Andrew's prime mission aside from renewing old friendships with American steelmakers will be an attempt to obtain firm commitments from American steel companies to ship 2 million tons of steel to Great Britain in 1947. This tonnage represents material required over and above what will reach Great Britain through normal commercial channels by way of regular steel exports.

That his job will be difficult is evidenced by the fact that the official buyer from the British Iron & Steel Federation who preceded Sir Andrew has so far been unable to obtain a concrete promise cover-

By TOM CAMPBELL  
News-Markets Editor

• • •

ing the British steel demands. So far it appears that even Sir Andrew may finish his visit here with no definite prospect of his industry receiving the amount of steel which it is claimed is needed to keep British steel output of finished products at a high level of operations during 1947.

Great Britain's experience in obtaining raw steel in 1946 was interfered with by the high demand in this country, the steel strike and the subsequent coal strike, all of which tended to reduce normal exports of steel to a new low level. It is pointed out that the steel requested by the Federation does not represent tonnage which could be counted as normal American steel exports made by American steel companies.

This material which represents roughly about 400,000 tons of steel ingots, 1,250,000 tons of semi-finished steel and 345,000 tons of finished steel is for the purpose of increasing finished steel

output in Great Britain, and of course to supply from British mills, major manufacturing concerns there.

British steel officials are fully aware that conditions in this country are such as to present great odds towards their request being fulfilled. At the present time the amount of steel ingots and semifinished steel being produced in the United States is required to keep a semblance of distribution going into finished steel channels. There is no excess of this type of material at the present time.

It is assumed that the majority of the semifinished steel requested by the Federation is for the purpose of producing flat-rolled products or at least those urgently sought in this country by American manufacturers. Furthermore, it is known that at least half of the finished steel products desired by England involve cold-rolled sheets—a sore spot in the automotive industry here.

Just as American automobile makers are facing a steel shortage on the basis of desired production schedules so is the British automotive industry finding a

famine in sheet products in its country. At the present time steel exports from the United States going into normal commercial channels represent about 5.8 pct of total finished steel shipments. Since some of this material is being shipped upon a U.S. Government directive it is estimated that the normal export market is taking no more than 4.5 pct of total steel shipments compared with 8.5 to 9 pct in the prewar year 1935-39.

The reason why American steel exports are at a low point, steel officials say, is because of the urgent demands in our own reconversion economy. It is to be expected that American manufacturers such as the automotive industry would exert terrific pressure on steel companies if the latter attempted to export semifinished steel to the extent of 2 million tons which they would expect would produce at least 1,400,000 tons of finished products, especially sheets, in this country.

Another angle which steel officials think of but about which little is said is a loss of home scrap that would be occasioned by the export of steel ingots and semifinished steel. With scrap supplies in this country at a new low point, it would be more than a casual incident to lose almost 400,000 tons of home scrap in exporting of 1,650,000 tons of steel made up of ingots and semifinished material.

Some sources in this country remember that before the war Great Britain obtained as much as 4 million tons of semifinished material a year from Continental countries including Belgium, Luxemburg and Germany. Today she is getting none from Belgium and Luxemburg, and the possibility of steel production in Germany on a large scale continues in the discussion stage.

About the only possible chance of the Federation obtaining a large part of its 1947 request for Ameri-

can steel lies in the possibility that by July 1947 steel demand in this country may have eased off to an extent where ingots and semifinished steel can be shipped to England. On the other hand should demand from the domestic market be reduced to that extent it is to be expected that American steelmakers will want to concentrate on their normal export markets in an attempt to get them back to the prewar level at least.

On the other hand while leveling off in steel demand in this country is expected in the early part of 1947 such an adjustment period is much more likely to wash out duplicate steel orders, eliminate excessive carryovers, contract unprecedented backlogs and thus put the American steel industry and its customers on a balanced supply and demand basis. Such a condition would not necessarily mean that an excess of ingots and semifinished material would materialize.

## British Worried Over Prospects of Buying Steel Here

### London

••• A buyer from the British Iron & Steel Federation who has been in the United States for several weeks is experiencing increasing difficulty in exercising the commitments which he carries for approximately 2 million tons for 1947 delivery. British authorities feel that shipments from the United States by the end of this year will total approximately a quarter of a million tons, and are presently anxious to obtain 2 million tons for next year, of which approximately two-thirds will be ingot and semifinished material while roughly one-third will be in finished products.

Without assistance from the American Government (and British officials appear not to be attempting to procure such assistance), the prospects of obtaining such a tonnage are considered slightly dubious. British officials recognize two conflicting schools of thought in regard to the possibilities of 1947 delivery from American mills and are largely undecided as to which theory is the more accurate.

Some American sources have reported that a long-range settlement of steel labor problems can be ex-

By JACK R. HIGHT  
European Editor

o o o

pected in the first quarter of next year and as a result a period of maximum production unscarred by work stoppages is to be expected during 1947.

This theory is further developed with the idea that a large percentage of the tonnages of steel now on mill order books represents a duplication on the part of consumers and will begin to evaporate rapidly as soon as deliveries of initial orders take place. The authorities reporting this theory to London predict that somewhere in the middle of 1947 American mills will suddenly find themselves in a position to deliver large tonnages for export.

An opposite view is also being heard by anxious British buyers who predict that there can be no permanent long-range settlement with steel labor next year and that the inflation of orders is exaggerated. British officials here then remain hopeful for their prospects next year, but are also measurably and knowledgeably optimistic as to the probabilities.

The British industry hoped in the middle of 1945, when the end of the war altered the relationship between the steel industries of the two governments, to continue the purchases which had been made during the war. An immediate need was recognized for approximately 1 million tons of semifinished and finished products to be delivered in 1946. Unfortunately, however, the British steel industry, along with most other potential buyers on this side of the ocean, was seriously threatened by a national shortage of dollars.

Until the British Government could offer some assurance that the British-American loan was a reasonable probability, the British industry was forced to assume that it would be impossible to make such purchases. The assurance that the loan would probably be available could not be given until December of 1945, and by that time the order books of most American steel firms were already blotted.

British buyers experienced extreme difficulty in placing the 1946 orders for 1 million tons, particularly as the steel strike loomed over the horizon, to be followed in rapid succession by the coal strike, ren-



dering large deliveries impossible until well into the third quarter.

It is against this background then of sober disappointment that the British industry is once again seeking sufficient raw material for its industry to keep 1947 production at a high level. No American mill order books have been opened to the British buyers for 1947 up to the date of this writing, and the buying mission is still in the position of having placed virtually none of the desired tonnage.

Prices which are being paid for present shipments average about £19-£20 (\$76-\$80) per ton and British officials presume that approximately the same levels might prevail for 1947 business. Any contracts which would be written, however, would of course be on the basis of existing prices at the time of delivery, as this is the popular method of doing business both in Britain and in America.

The price factor is probably one of the principal reasons why Britain depends so heavily upon the American industry for these materials. Belgium and Luxemburg, which before the war furnished upwards of 1 million tons annually to the chronically short British industry, are today in the position of selecting their markets carefully with an eye to a maximum of remuneration.

It is definite that the tonnages of Continental semis which are available to Britain within the price range which she is willing to pay are extremely limited. This writer is informed that for the next 6-month period the contract totals the magnificent figure of 30,000 tons.

A period of acute sheet famine is beginning to develop in the British steel industry rather behind the similar development in America. The delay is probably partially attributable to the rather more cautious if equally more steady development of the planning for the British motor car industry.

However, the automobile industry here is rapidly approaching a point where sheet steel is to become the controlling factor on production, and with the increasing importance of steel to the government's subsidized national housing program, the sheet famine seems bound to become more serious.

There have been occasional reports that with additional raw ma-



**HARD TO GET:** Temporarily held up in New York harbor by the maritime strike, this steel strip and pipe is on its way abroad. Sheets and strip are being exported in minute quantities at the present time.

terial, possibly substantial sheet bar imports from America, British domestic production might be expanded to ease the situation. These reports are probably overoptimistic, as high-ranking steel executives here do not count on any substantial improvement in the sheet situation until the long-range modernization program brings into operation new continuous mills.

Probably the most pertinent question which will dictate the decision of American mills as to the wisdom of allocating substantial 1947 output to British consumers will be the long-range prospect of continuing such business. From this standpoint the prospect up until the middle 1950's would appear to an observer in Britain to be fairly good, assuming that Continental producers will not be in a position to undercut American production.

The British industry was not self-sufficient in regard to semifinished steel before the war, is not now, and has no detailed plans drawn up at the moment which will render it self-sufficient in the foreseeable future. Needing 2 million tons next year, Britain is then looking forward to the development of a modernization and expansion of primary as well as finished steel production which would presumably have been consummated in 5-7 yr, i.e. 1950-52.

However, this program as it has

been previously defined has been the subject of local criticism because it does not anticipate self-sufficiency in respect of raw steel. British journals have suggested that the British Iron & Steel Federation should have taken a more optimistic line and have drawn up a modernization plan which would render the industry independent of imported semifinished steel.

Without debating the relative merits of such a suggestion, it seems certain that the Federation put the limitations that it did upon the plan because the scarcity of labor and of steel machinery building industries make it physically impossible to accomplish more in the specified period.

In addition to this fact the modernization program which was drawn up in 1945 is already approximately 1 yr late, and seems likely to fall even further behind schedule as a more or less inevitable result of the political wrangling which has surrounded the nationalization issue, and the unfortunate delays dictated by the absence of a loan ratification.

The position now is that many of the firms who might have assisted in the steel modernization program have sometimes reluctantly filled their order books, and the program which Britain hoped to finish in the early 1950's seems now more likely to run into the middle of that decade.



**SCRAP ON WHEELS:** *Hundreds of thousands of the Army's combat vehicles, trucks, half tracks and jeeps were run to death during the war. Some have gone into cupolas and openhearth, many were sold abroad as surplus, lots are rusting away overseas for lack of facilities and money to bring them home.*

## Subsidy Is Essential to Return Of Battlefield Scrap to This Country

### Pittsburgh

• • • The question of subsidizing battlefield scrap and moving it back to this country, proffered by R. W. Wolcott, president of Lukens Steel Co., and chairman of the American Iron & Steel Institute's scrap committee, has the tacit approval of the steel industry. This is evidenced by the fact that in his capacity as chairman of the Institute's scrap committee, he speaks for the industry.

In making his recommendation, Mr. Wolcott pointed out that tremendous tonnages of scrap belonging to the U. S. Government can be returned to this country and that the Army and Navy would return the scrap under their respective jurisdictions if means could be found to cover the costs above ceiling price realizations. The suggestion was also made that foreign labor be used to prepare the scrap prior to shipment to take advantage of lower shipping costs for prepared material.

Steel companies have long been in favor of the return of battlefield scrap, as have scrap dealers, but no one wants to bear the high cost of preparation and shipment which in most cases exceeds considerably the OPA ceiling prices. One recent suggestion offered that may avert the necessity of subsidy but still keep the cost of scrap within ceiling limitations was the use of the Army in Europe for collecting, transporting and loading the scrap onto ships, and possibly

preparing it prior to loading. It is claimed in some circles that since the Army in Europe is large, it is quite possible that a portion of it could be utilized in this endeavor. Army spokesmen, however, maintain that we have scarcely enough troops abroad to perform normal occupation duties.

Some observers, despite Mr. Wolcott's recommendations, disclaim that tremendous tonnages of scrap exist in Europe. In comparison with the gigantic scale of operations in fighting the battle of Europe, observers say there is little scrap. Several who have been in Europe and have considered carefully the scrap potential of the battlefields indicate that proportionately little of the available scrap is U. S. Government owned. Some exists at Normandy and Marseilles, where initial landings were made. Further, in the Marseilles harbor lay many thousands of tons of wrecked shipping, but this is French owned. Scrap owned by the U. S. Government in England and France has been largely disposed of locally, and North African scrap is reported to have been pretty well cleaned up and shipped back to England. Some landing mat scrap came back from Italy to this country, but this source is believed pretty well cleaned out.

In the American zone in Germany there is some scrap from devastated areas. It is understood that this can be taken by the U. S. Government as reparation scrap. Also,

surplus Army equipment that was not sold to France or the lowland countries or shipped back to the United States is reported to be in this area. It is understood that the Army at one time was ordered to ship scrap back to this country as ship ballast, but the order has never been too effective.

On the scene observers point out that in many areas there is no devastation scrap and where it does exist it is frequently mixed with other material. It was pointed out, for example, that after the battle of St. Lo there wasn't as much scrap as might be generated from the wrecking of a fair-sized American office building mainly because construction in that area was primarily masonry. An official of a large steel company that was in the area is reported to have stated that Frankfurt, Germany, was 17 million tons of rubble in which were mixed about 45,000 tons of scrap.

An American commission that went to Europe to study the scrap situation last fall recommended that what scrap was available should be brought back, but the Government refused to do it on a subsidy basis. Since OPA domestic scrap ceilings likewise apply to imported scrap, commercial scrap interests here cannot afford to do the job. A case in point was a recent offering of the Navy of 80,000 tons of mixed scrap at Pearl Harbor on an "as is, where is" basis that got a top bid of \$88,000 simply because preparation and shipping costs prohibited a higher offer when the prepared scrap had to be sold under domestic OPA ceilings. Further, a large steel company had to turn down an offer of scrap from New Zealand because it would have cost about \$30 a ton at the mill.

Despite these conditions, however, many dealers and consumers point out that every little bit of scrap made available will help the critical situation in this country, and if some can be obtained in battle areas, it would be well to get it. However, there is the danger of pinning too much hope on a tremen-



dous supply of battlefield scrap and then being disappointed by the trickle that would come through under the best conditions.

As to Pacific scrap, longer shipping hauls plus the fact that much of the scrap is in inaccessible areas

hinder its collection. Further, foreign labor in these areas, especially the native islands, will be of little use. Actually, the most fertile scrap source in the world is the bottom of the oceans, but this is somewhat inaccessible.

mand for several months into the future. Nail supply is not quite as critical as it was 3 or 4 weeks ago, but consumers are paying more than double the normal domestic price. Larger quantities of nails have been reaching Canada from the United States and it is stated that these are selling now around \$12.85 per 100-lb keg, against the normal Canadian price of \$4.50 to \$5.

No improvement in supply was reported for merchant pig iron in the past week or 10 days. No shipments have been made by the Steel Co. of Canada or Algoma Steel Corp., since the middle of July, with the result that melters have had to depend on Canadian Furnace Co., or imports from the United States for their iron supply. It is not expected that the big producers will be ready to take action in the merchant market for a month or 6 weeks. In the meantime, while some melters have been successful in obtaining iron, others have been forced to curtail or suspend operations.

## Full Production by Canadian Steel Firms Seen in 4 to 6 Weeks

### Toronto

••• While there has been some easing in the iron and steel supply situation in Canada since the end of the steel strike, most steel lines continue in critical short supply. According to reports issued by the various steel companies, it will be a month or 6 weeks before full production schedules are attained. The Steel Co. of Canada, Ltd., Hamilton, is operating one blast furnace with two down for relining, and is just starting operations in its sheet and strip mill; the plate mill also has returned to production, while most other departments also are working on reduced schedules owing to shortage of steel for various finishing departments. It is not expected that full production will be reached at the Hamilton works until early in 1947.

Operations were resumed on a partial scale at Algoma Steel Corp., Sault Ste. Marie, last week. Workers in the 12 and 1-in. rolling mills are back on the job; No. 3 blast furnace has been lit and other blast furnaces are expected to be in operation within a few days. However, it is not expected that the company will have all men back on the job and full production underway in less than a month or 6 weeks.

Dominion Steel & Coal Co., Sydney, N. S., is still slow in resuming operations and so far only about one-third of the strikers have been called back. The company has announced plans for cutting operations and crews in some departments. To cope with the increased wage scale, Dominion Steel & Coal Co., will be granted a subsidy by the Canadian Government, but according to reports from Ottawa this will continue only for a few months and it is a matter of conjecture as to what

may happen to the new company when subsidies are discontinued. Some political leaders in Nova Scotia have been strongly suggesting that the federal government take over and operate the Sydney steel works.

With the three big Canadian steel producers out of the market insofar as taking new orders for delivery to the end of the year on heavy steel lines, considerable uncertainty prevails regarding speedy step-up in operations of various industries depending on steel for their raw materials. Structural steel fabricators state that there is little prospect for delivery of lighter lines of steel before the end of the year from domestic producers, and only small quantities are being received from the United States. On the heavier lines, however, American deliveries have shown some improvement of late. Shortage of structural steel continues to slow down new construction jobs and contracting firms see little prospect of much improvement before next Spring.

Sheet and strip are in critically short supply in Canada and while some production soon will be underway, output for the next 5 months will be required to fill old orders. Mills are not accepting new business in sheets or strip for delivery this year and it is questionable if books will open for first quarter orders. Bar demand is heavy and while mills are not interested in additional orders for heavy bars for this year's delivery some are taking on small tonnages in lighter sizes. Plate mills are said to be fully booked on production to the end of the year. Some interests look for easing in the nail supply situation within the next three or four weeks, but producers see little or no hope of catching up with de-

## Agency Report Shows 1946 Employment Trend

### Washington

••• In line with the general employment trend of the nation which showed a general increase during the first half of 1946, the number of workers in the iron and steel industry and related products rose from 1,502,000 in December 1945 to 1,598,000 in June 1946, according to the latest report by the Federal Security Agency. These figures include only workers covered by state unemployment insurance laws.

Employment of covered workers climbed from 27,549,000 in December to 29,160,000 in June, approximately 2.1 million less than the all-time high of 31.3 million in June 1943, the report revealed.

Automobile manufacturing showed the greatest gain in the metals and machinery groups, up 35 pct from 254,000 to 342,000 during the six-month period. Other figures were:

Machinery (except electrical), up from 1,189,000 to 1,312,000; electrical machinery, from 735,000 to 819,000; and nonferrous metals and their products, up from 414,000 to 473,000.



## Pig Iron Makers Will Be Given Price Relief On New England Sales

Washington

• • • Acting under a program of the OWMR (THE IRON AGE Oct. 10, P. 112), OPA announced on Oct. 21 that pig iron producers may apply for special ceiling price adjustments on shipments from outside areas into New England to cover total costs plus average freight. Becoming effective with issuance of the amendment to the pig iron schedule, the action was taken under a temporary emergency CPA directive. It will terminate on Dec. 31, or automatically before that date if the CPA directive should expire.

This step was taken, OPA said, because of the pig iron shortage in New England. The shortage was attributed to the shut down some months ago of an important New England blast furnace and to difficulties experienced by producers outside of New England in shipping into the area under a requirement that they absorb freight charges.

The reference is to Mystic furnace, Everett, Mass., which will soon go into blast again under the NHA Premium Payment Plan. Another furnace outside the New England area, OPA pointed out, is expected to provide an additional supply for New England under the Premium Payment Plan.

Freight absorption on shipments to New England, fixed within the framework of the basing point system used by the industry for a number of years, is substantially higher than on shipments from blast furnaces to other pig iron consuming points. These provisions cannot be altered, OPA said, without endangering the stabilization program.

Specifically, the OPA adjustment provision permits the producer who ships merchant pig iron to New England points under CPA directive, to apply for adjustment of his ceiling prices to cover total costs of production at his furnace, plus his average freight charges from the furnace to the New England points. He may sell in open billing while his application for adjustment is pending under OPA adjustable pricing provisions.

## Pittsburgh's Worst Power Strike Ended

Pittsburgh

• • • By a vote of 1197 to 797, members of the Independent Assn. of Employees of the Duquesne Light Co., and associated companies, voted to submit their demands to arbitration, ending a 27-day power strike in Pittsburgh on Oct. 20. The strike is conservatively estimated to have cost Pittsburgh business close to \$400 million, much of which will never be regained. Workers alone have lost about \$60 million in wages, most of them being laid off through no fault of their own. Steelmaking was virtually unaffected.

The strike of the power employees was probably the costliest strike ever to hit the city of Pittsburgh. By far the greatest loss was to some 400 small manufacturers and fabricators, which had been shut down until a week ago. Last week, however, a single shift from midnight to 7 a.m., was permitted, this period being during the low point in the power load.

## Gadsden Furnace Blown In

Washington

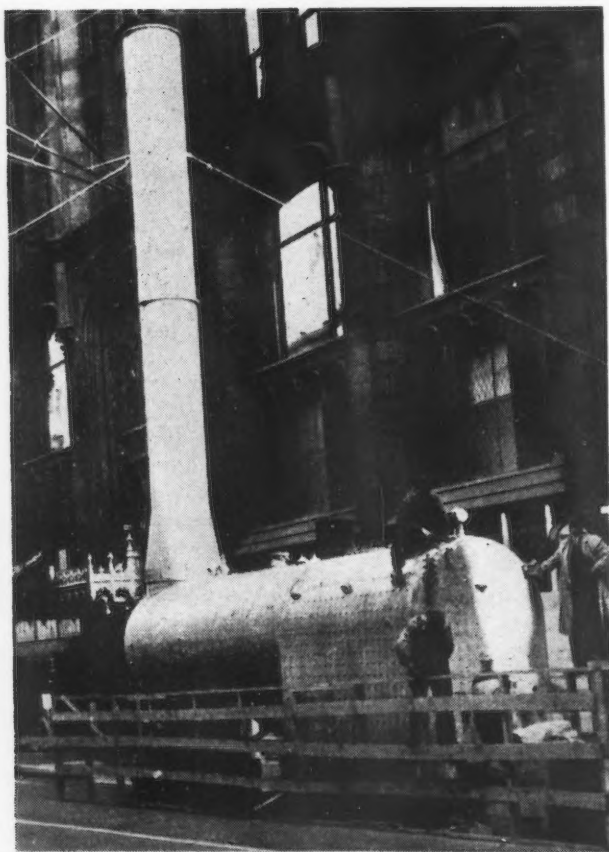
• • • The DPC-owned 800-ton blast furnace at Gadsden, Ala., leased by WAA to the Republic Steel Corp. went into production on Oct. 21 under the NHA subsidy plan which provides for an incentive payment of \$12 a ton on shipments of foundry and malleable pig iron. The iron will be used for the production of housing items. According to Housing Expediter Wilson W. Wyatt the output from the Gadsden furnace, estimated at 20,000 tons a month, will mean an increase of more than 20 pct in the southern area's shipments of foundry and malleable iron.

## WAA May Cut Sales Time

Washington

• • • WAA zone administrators and regional directors have been authorized to shorten the time periods allowed various priority claimants to buy at site sales, if justified, it is announced by Administrator Robert M. Littlejohn.

Veterans will still receive 15-days' notice before sales close.



STEEL CITY SHIVERS: Last week the Union Trust building set up this 150-hp boiler to take the chill off tenants who moved cautiously through dimly lit offices and corridors as Pittsburgh's paperwork production suffered from the power strike which ended last Sunday.

# Weekly Gallup Polls . . .

## Democratic Party Reaches Lowest Point in 16 Yr

Princeton, N. J.

• • • Democratic Party strength throughout the nation has reached its lowest point in 16 yr, according to George Gallup, director American Institute of Public Opinion.

That was the situation in the first week of October, 1 month before the election. Whether the same situation will prevail at the time of the election future surveys will indicate.

The serious trouble which the Democratic Party faces is shown in five continuing surveys on five separate and important aspects of the political situation. While each of these trend studies deals with entirely different factors, they each have a bearing on the campaign and they all point in one direction—to a definite and nationwide trend away from the Democratic Party.

This trend was of such major proportions in early October as to indicate Republican control of the House if the election had been held then.

To throw as much light as possible on the present political campaign, the institute has explored public thinking on the following five aspects :

(1) What party do voters favor today as they think about the congressional elections?

(2) Which side are the independent voters favoring this year?

(3) How would the parties stand if this were a presidential year, instead of a mid-term election, and a race for the presidency were in progress?

(4) What do the voters think of the head of the administration and leader of the party in power, Mr. Truman?

(5) Which party do people think can best handle the problems which they themselves consider important today?

Here is what the five different continuing surveys show on these five aspects of the political situation:

(1) In late September and early October 43 pct of the nation's

voters who indicated an interest in the Congressional elections said they planned to vote Democratic, while 57 pct said they planned to vote Republican. This compares with a Democratic popular vote of 47½ pct in the last mid-term congressional election, 1942, or a drop in Democratic voting strength of nearly five points.

The survey figure applies to the total number in the poll who signified their intention to vote election day, Nov. 5. Judging by voter registration in New York recently—generally a good index of national voter turnout in November—the total votes cast in the congressional election next month will be somewhere between 35 million and 43 million.

(2) The balance of political power in this country in recent elections has been held by the so-called independent voters, who are not regular Democrats or regular Republicans but who swing from one party to the other according to their own independent convictions. In recent elections most of the independent voters sided with the Democratic Party—in 1944 62 pct of those who voted cast their ballots for Mr. Roosevelt, 38 pct for the Republican candidate Thomas E. Dewey.

Independents polled by the institute divide 41 pct in favor of the Democratic Party in the congressional election, and 59 pct in favor of the Republicans.

(3) In past years the institute has found that a highly reliable index of party strength, and of change in political sentiment, is a continuing survey which asks people how they would vote if a presidential election were being held at the time. Political trends in the last 2 yr have been measured in more than ten of these surveys at periodic intervals.

The latest, completed in the first week of October, found 47 pct of the nation's voters saying they would prefer the Democratic Party, 53 pct the Republican Party. This compares with a Democratic vote of 54 pct in the

## Recent Polls Point to GOP Control of House in The Coming November Elections

• • •

1944 presidential election, or a drop of seven points.

This continuing index has shown the party losing popularity for more than a year, with the loss accelerated in recent weeks.

(4) There has been a sharp change in the public's feeling about the sort of job Mr. Truman has been doing as President. In the present reconversion period which began soon after he took office, he has fallen heir to the most politically troublesome issues in recent history. Probably no one in the presidency could have handled these problems to the complete satisfaction of all the groups and factions in the country.

Only 32 pct of voters polled in late September said they were satisfied with the way Mr. Truman has handled those issues.

However, Mr. Roosevelt was once at a similarly low point. In June 1939 only 39 pct of the country's voters said they would vote for him for a third term. That was before the war in Europe broke out and when domestic problems were uppermost in the minds of voters, as is the case again today. When war came later that same year, sentiment in favor of keeping Mr. Roosevelt in office rose sharply. This year's election is the first nationwide election in 8 yr to be held at a time when there was no war or imminent threat of war.

(5) Basic political trends in this country can be charted by the vote of the people on major issues facing the nation. How the voters feel about those issues, and how well they think each party can handle them, bears a close relation to how they will vote at election time.

As in other years, the institute has asked each voter what he considers the most important problem

(CONTINUED FROM PAGE 146)





**ELEPHANT OR GAZELLE:** *New diesel prime mover which can be used for many hauling jobs by simply changing the gear train. Designed by Electro-Motive Div. of GMC as the F-3 this new engine is the latest in railroad diesels.*

## New Diesel Adaptable For Freight Or Passenger Service

o o o

duced, permitting greater overall stability and better hugging on curves.

In the truck assemblies two four-wheel trucks are provided each locomotive and are interchangeable. By new treatment of load suspension, which Electro-Motive has developed, improved riding qualities and greater stability are claimed. The truck frame is supported on each of the four journal boxes by twin group coil springs. Bolster springs which are fully elliptic rest on each side of the spring plank which in turn is carried by swing hangers pivoted from outside the truck frame. Each of the four motors supported by the driving axle to which it is geared and the special suspension on the truck transom provides a flexible support which stamps out the torque shocks of the motor.

The great multiplicity of steam engines which railroads have had to buy and maintain, for specialized service and demand, has been a costly practice. Seven different gear ratios can be inserted in the F-3. The changeover takes about a day and will be available to all railroad shops. By having the choice of seven gear ratios, one to four separate 1500 hp units, or the older 1350 hp units, it is now possible to obtain 28 distinct combinations or diesel locomotives capable of any job on any railroad.

In comparing modern diesel to steam power some sources state that the diesel is equal to large malt engines on availability alone. The cost of the F-3 is around \$500,000, which is more than the 4-10-10-4 mallets but the F-3 will haul more freight faster despite its horsepower rating being 1000 less than the present large steam engine.

### La Grange, Ill.

••• With the unveiling of the new F-3 600 hp locomotive, at the La Grange plant of the Electro-Motive Division of General Motors Corp., the latest GM developments in diesel railroad motive power were revealed. From the experience gained with diesels, which have so far gone more than 200 million miles in high speed passenger service and lugged 160 billion ton miles of freight, Electro-Motive has now evolved the first all purpose prime mover. The extreme wide range in performance and versatility of the F-3 allows the same basis unit to be used in heavy freight or fast passenger service. Through the use of interchangeable gear trains one diesel locomotive can now supplant the many types of steam engines formerly needed to handle the wide variety of jobs found on American railroads.

For the past year the F-3 has been in tests in both freight and passenger service and has gone 110,000 miles on 21 Class I railroads. Tests have been run under all possible conditions and on all types of service. The F-3 is a mainliner but is built short enough to get around any place a box car can go. D. R. Osborn, vice-president of GM and general manager of Electro-Motive Div., disclosed at a press conference, held Oct. 22, at the LaGrange plant, that they had received orders from 30 railroads for a total of 1,777,500 hp before the first model was

completed. The first lot of 100 units, which will be delivered to the Santa Fe, are geared for 100 mph service. Electro-Motive will continue to build the 600 and 100-hp switching units along with a 2000 hp, ultra high speed passenger unit, which is designed only for hauling light-weight short length trains. The F-3 will cover all the freight and long Pullman train high speed service.

In the 50 ft 8 in. length of the new "lead" unit is compacted 1500 hp all of which is available for propulsion. Auxiliary power is separately generated and has been accomplished without the use of one V-belt or extension shaft. The AC auxiliary motors employ no brushes, and engineers at the plant flatly state, they need not be serviced in any way for at least 3 yr. For the first time in railroad service, one electric transformer, capable of either AC or DC current is available.

The diesel engine used is the same motor that proved so capable in the 1350 hp freight engines which came out in 1940. Through redesign and refinement of electrical transmission each F-3 unit is now capable of 1500 hp. The speed of the new unit is 800 rpm. Through use of a governor the full power of the engine is never reached so the safety factor is automatically built in. "Booster" units are 8 in. shorter than the "lead" or cab unit. By moving the four-wheel truck further out the overhang of the F-3 has been re-

## OPA Changes Pricing Rules on Industrial Machines and Equipment

Washington

••• Effective Oct. 22, OPA removed automatic pricing provisions from the industrial machinery and equipment price adjustment regulation. It was announced that the change was made to end widespread inequities. OPA explained that many resellers, who did not fully understand the adjustable pricing procedure absorbed price increases from their suppliers and in some cases took substantial losses.

Manufacturers will continue to be allowed to sell at prices to be adjusted upward after delivery to a higher price approved by the agency but only in cases where OPA issues a specific order permitting adjustable pricing. These orders will be issued only when they are necessary to promote distribution, will not cause undue hardship to resellers and will not conflict with the purposes of the Price Control Extension Act of 1946, OPA said.

At the same time another adjustment change was added to assist manufacturers of products declared critical by CPA. It is designed to encourage greater output of critically needed products by manufacturers able to increase their current number of hours of plant operation or the amount of their subcontracted work. Either of these methods would entail extra expense for which OPA could provide compensation under this action. However, any price increase granted by OPA would be based on applications by individual manufacturers and definite production commitments.\*

At the same time, OPA changed its individual adjustment provision to prevent an individual price increase being granted if at the time an industry-wide action on the same products is contemplated.

By another change, OPA limited the amount of allowable profit in cases where individual applications for price adjustments are processed on a current basis by establishing a maximum equal to the ratio of profit to sales in the 1936-39 period.

The agency explained that in processing applications for price

adjustments on an overall company basis, the agency's standards provide for total costs plus a reasonable profit. In the past reasonable profit has been considered to be the average return of operating profit to net worth in the 1936-39 period in projected cases and as the average net profit before taxes to net worth in the same 1936-39 period for applications processed on a current basis. However, this current-basis method was said to have proved unsatisfactory in cases where net worth has increased greatly since the base period due to unusually small net worth for the company in the prewar period or abnormally high current net worth. Moreover, it was stated, in many cases the large current net worth of the company reflects outside investments and is not related to its usual business and so should not be considered. The change will correct this condition, OPA pointed out.

## Priority Applications Require Supply Source

Washington

••• OPA has announced that all applicants for priorities assistance

in obtaining iron castings and steel must furnish complete information regarding their source of supply in the year to date. It was stated that this information is needed to determine whether an applicant meets the provisions for priorities assistance through PR-28.

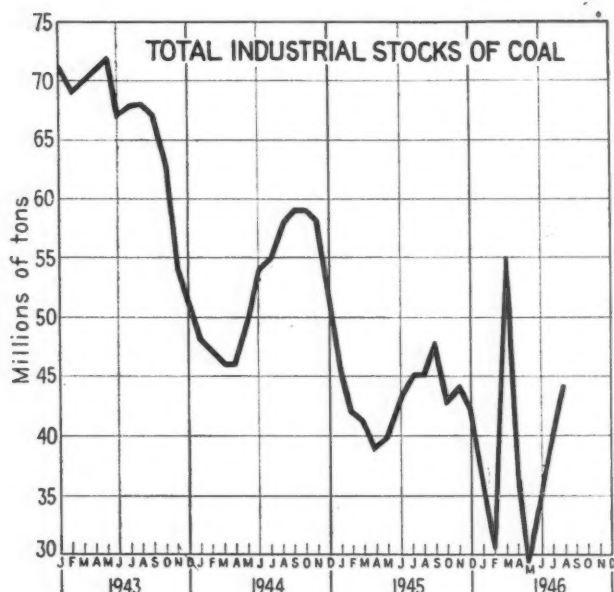
In addition to the other information required on the regular application form CPA-541A, the applicant must now show the total 1946 quarter receipts (actual and anticipated) of iron castings and steel from each supplier for the plant activity covered by the application.

Exact tonnages must be shown for the first and second quarter of the year, while for the third quarter exact amounts received from each supplier must be shown where possible. Estimates may be used in the latter instance where exact figures cannot be supplied. For the fourth quarter, the receipts shown from each supplier should include estimated amounts expected to be received after the date of application, plus amounts received up to the date of application.

**PICKETS PICKET PICKETS:** AFL and CIO pickets lunch with Frank Callisch, co-owner of a strike-bound bottling plant in San Jose, Calif. The bottling plant is picketed by the AFL whose pickets are being picketed by the CIO. Callisch, who provided the lunch is in the middle and is picketing both factions. Two of his guests are AFL, the other three are CIO members.







## High Steel Output Hinges On Steady Coal Supply This Winter

By T. E. LLOYD  
Pittsburgh Regional Editor

FIG. 1

### Pittsburgh

• • • Grave concern has been expressed by the steel industry, and other industries as well, as to the supplies of coal during the coming winter months. Actually, it appears from the statistics of the Dept. of Interior, Bureau of Mines, that stocks on hand are not far out of line with the 1945 stocks, and greater significance must be attributed to the steady production of coal rather than the stocks that have been built up. Generally, over the past 3 yr stocks held at consuming points have tended to diminish, as can be observed in any of the accompanying three graphs.

Since 1943, the general trend at byproduct coke plants, steel plants and other industrial plants has been toward lower stocks in actual tonnages and in days supplies. However, this is actually not too significant except when coal production is interrupted, and then operations must of needs close down more rapidly.

In graphing the stocks of coal as reported by the Bureau of Mines, there is a false indication evidenced in the 1946 trend, since stocks rose tremendously from December, 1945, through March, 1946. This was the result of careful hoarding of coal stocks and the pressure to obtain greater stocks

immediately preceding the coal strike.

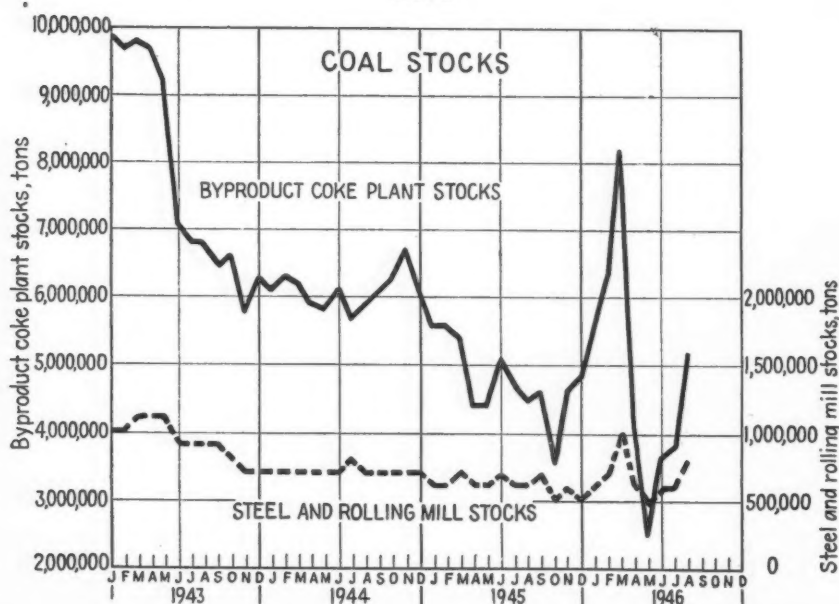
Fig. 1 shows the total industrial stocks of coal, including stocks of electric power utilities, byproduct coke ovens, and rolling mills, coal gas retorts, cement mills, class I railroads and other industrials.

From a high monthly stock in 1943 of 72 million tons, industrial stocks fell to a high in 1946 of 56 million tons and a more realistic high in 1946 of 43 million tons. Thus, stocks accumulated now, it can be observed, are in the neighborhood of slightly better than half of those 3 yr ago. Nevertheless, industrial activity is as great today as it was 3 yr ago. Consequently, it can be assumed that even though actual stocks are down, the important point is that production and delivery of coal to industrial users is steady and in sufficient volume. By the same token, August, 1946, total industrial stocks of 43 million tons are actually only 1 million tons less than stocks of August, 1945, and no undue difficulty from coal deficits was experienced in maintaining high rates of operations throughout the winter months of 1945-1946.

As to byproduct coke plants and steel and rolling mills, fig. 2, the situation is somewhat similar, although it must be remembered that this industrial coal user was closed down for a month early this year because of a steel strike. Stocks at steel and rolling mills (mainly steam coal) in August, 1946, totalled 800,000 tons. In August, 1945, these stocks totalled 600,000 tons. From this, it can be seen that this industrial coal user is actually in better shape this year than in 1945.

Also from fig. 2, byproduct coke plant stocks can be observed to be

FIG. 2



actually better on Sept. 1, 1946 than they were on Sept. 1, 1945. Stocks on that date in 1946 totalled 5.2 million tons, mainly metallurgical coal. On Sept. 1, 1945, stocks totalled 4.5 million tons at byproduct coke plants.

The Bureau of Mines reports that at the end of August, 1946, byproducts coke plants had 21 days' supply of coal on hand, while at the end of August, 1945, the stocks totalled 19 days' supply, as shown in fig. 3. Steel and rolling mills on Aug. 31, 1946 were reported to be holding 34 days' stocks of coal, while on Aug. 31, 1945, the stocks were sufficient for 30 days' operation.

Being based on all-over conditions, the Bureau of Mines reports obviously do not reflect local and specific conditions. Such being the case, there may likely be tight spots on coal supplies during the winter months, even though total figures indicate that stocks are not too far out of line. The Chicago area, particularly, is expecting trouble from coal and coke supplies, and conditions in that area might not conform to the

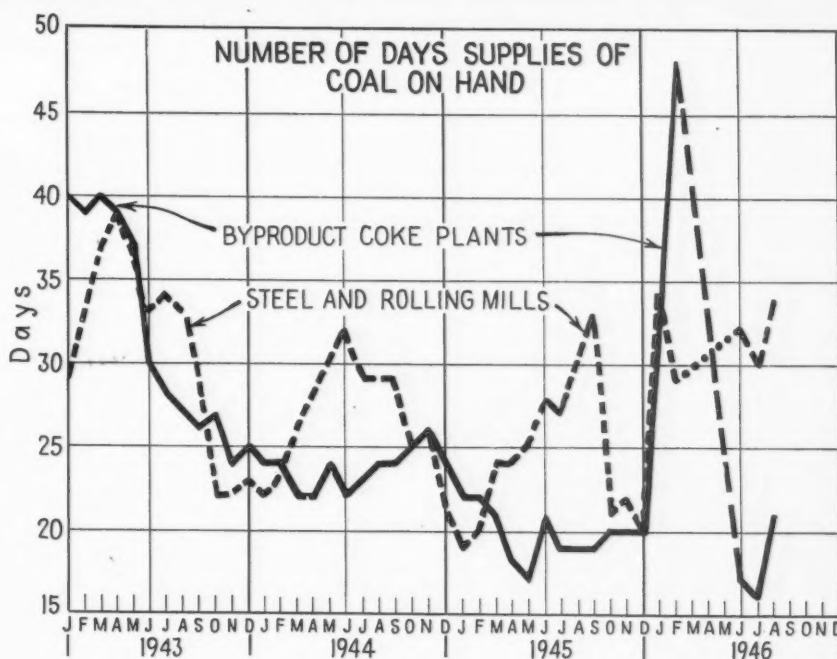


FIG. 3

national pattern. However, an assured steady supply of coal at a normal winter rate of production should see the steel industry and

other industries through the coming cold weather months without any undue hardship or any spectacular loss of production.

### French Steel Industry Shows Dissatisfaction Over Price Increases

Paris

• • • The French Minister of National Economy has read in the Constituent Assembly a letter concerning the dissatisfaction of the French steel industry with price increases recently granted. This move was possibly made to forestall criticism of the announcement of further price increases which was made at about the same time. The increases are part of an effort to eliminate the government subsidy system that has been protecting the price levels.

Although prices in France were to have been frozen at the new increased levels of Sept. 20, the ministry announces that the following list was agreed to before that date, but the announcement has been delayed by administrative problems.

New levels have been fixed for iron ores. In the eastern area the selling price to French iron and steel works is fixed at 280 francs (\$2.33) per metric ton against 174 francs (\$1.55). For Pyrenees iron

ores, prices of crude hematite and carbonated ores are fixed at 830 francs (\$6.91) and 890 francs (\$7.41) for roasted carbonated ores against 820 francs (\$6.83).

Tungsten ores produced in France have been fixed at a maximum of 4900 francs (\$40.83) per metric ton, whereas previously the prices were fixed separately for each mine. Formerly the price at the Leucamp and Puy-les-Vignes mines was 4300 francs (\$35.83), and 4700 francs (\$39.16) for the mines at Montmins. The production at these mines is very low and industry depends on foreign deliveries.

The selling price per kg of ferrotungsten has increased from 391 francs (\$3.26) to 393 francs (\$3.27), and for ferromolybdenum from 304 francs (\$2.53) to 310 francs (\$2.58). Electrolytic copper ingots whose selling prices per metric ton in August last ranged from 34,000 francs (\$283) to 46,000 francs (\$383) have been increased to 48,000 francs (\$400); cathodes to 47,520 francs (\$396) as against 45,540 (\$379) and 33,660 (\$280) previously; soft lead to 34,000 (\$283) as against 32,000

(\$266) and 24,000 (\$200); thermic zinc to 31,000 francs (\$258) as against 27,000 (\$225) and 24,000 (\$200); cadmium to 600,000 francs (\$5000) as against 420,000 (\$3500) and 313,000 francs (\$2608).

### Buick Output Higher

Flint, Mich.

• • • Averaging nearly 1200 cars daily, the Buick Motor Div. of General Motors established its biggest monthly total output since the war during September when 23,272 automobiles were assembled according to a recent announcement by H. H. Curtice, Buick general manager and vice-president.

Although production is still restricted by shortages of parts and materials, Buick exceeded its August output by nearly 16 pct Curtice said. Buick production for the first nine months of 1946 totals 88,037 cars.

Buick's biggest weekly volume during September occurred during the week ended September 28 when 6366 automobiles were produced in five working days.



## See Factory-Built Houses Using Half Aluminum Sheet, Extrusion Output

### Washington

• • • A continued shortage of aluminum with a possible reduction in the supply for regular users is indicated in the announcement by NHA of plans to contract for the fabrication of up to 100,000 factory-built aluminum homes in 1947 in order to accelerate the veterans' housing program.

Plans for the aluminum housing were outlined at a meeting of the newly formed Aluminum Sheet and Extrusion Industry Advisory Committee. The decision to use aluminum for housing, NHA officials said, was based on indication of continued shortages of steel, wood and other housing materials.

Under the new program, NHA requirements would total 400 million lb or nearly one-half of the present output as estimated by CPA. Current production is at the rate of 836 million lb but CPA has estimated that this can be boosted to from 1.26 to 1.46 billion lb with existing facilities.

Aluminum requirements for 1947 housing are roughly divided into about 343 million lb of aluminum sheet and 55 million lb of extrusions. The extrusions will be used not only in the factory-built homes, but as substitute for wood window frames in conventionally built houses.

Requirements for the housing program will reach a peak in the third quarter of 1947, NHA officials say, when it is expected that 37 million lb monthly will be needed.

Industry representatives at the meeting said the extrusion demands could be met but questioned the industry's ability to provide the sheet aluminum requirements without diverting quantities from shipments to regular users.

A chief factor in the aluminum shortage is the lack of soda ash, production of which is now about 15 pct under requirements. An additional 60,000 tons or more would be required to bring about

the 50 pct increase in aluminum output which CPA believes can be attained.

In this respect, a measure of relief is seen in CPA's recent approval of applications for construction of two new soda ash plants in Michigan. One will be built by the Solvay Process Co. at Detroit and the other by the Wyandotte Chemical Co. at Wyandotte. Each plant will cost approximately \$460,000.

Members of the recently formed Aluminum Sheet and Extrusion Industry advisory committee are:

Jack Barrett, Extruded Metals, Inc., Belting, Mich.; Irving T. Bennett, Revere Copper & Brass Co., Baltimore; L. M. Brile, Fairmont Aluminum Co., Fairmont, W. Va.; G. M. Carter, Sheet Aluminum Co., Jackson, Mich.; and, I. A. Harvey, Harvey Machine Co., Torrance, Calif.

Also, S. S. Inch, Permanente Metals Co., Oakland, Calif.; T. W. Kuhn, Bohn Aluminum & Brass Co., Detroit; David P. Reynolds, Reynolds Metals Co., Louisville; Milton Rosenthal, United Smelting & Aluminum Co., Inc., New Haven, Conn.; and D. Wilmot, Aluminum Co. of America, Pittsburgh.

### Coming Events

- Oct. 28 American Institute of Steel Construction, convention, Coronado, Calif.
- Oct. 28-30 American Gear Manufacturers Assn., semi-annual meeting, Chicago.
- Oct. 29-Nov. 1. Refrigerator Equipment Manufacturers Assn., exposition, Cleveland.
- Nov. 7-8 National Founders Assn., New York.
- Nov. 14-15 National Metal Trades Assn., convention, New York.
- Nov. 15-24 National Aircraft Show, first annual exposition, Cleveland.
- Nov. 17-22 American Welding Society, Atlantic City, N. J.
- Nov. 18-22 National Metal Congress and Exposition, Atlantic City, N. J.
- Dec. 2-4 Society of Automotive Engineers, air transport meeting, Chicago.
- Dec. 2-7 National Power Show, New York.
- Dec. 5-7 Electronic Microscope Society of America and American Society for X-ray & Electron Diffraction, joint meeting, Pittsburgh.
- Dec. 5-7 Electric Furnace Steel Committee of Iron & Steel Div., American Institute of Mining & Metallurgical Engineers, annual conference, Pittsburgh.
- Dec. 9-11 Society for Experimental Stress Analysis, New York.
- Jan. 6-8 Institute of Scrap Iron & Steel, Inc., convention, New York.

### Chile Credits Granted For Purchases in U. S.

#### Washington

• • • Two credits, one for \$5,000,000 and the other for \$5,350,000, have been granted by the Export-Import Bank to Chile, the funds to be used for the purchase of equipment in the United States.

The first credit was for the Chilean State Railways. Purchases for general improvement of these carriers will include diesel electric trains, motor cars, components for freight and passenger cars, bridge materials, rails and repair shop equipment.

The other credit was for the Fomento Corp., the Chilean Government agency charged with initiating and assisting private enterprise to carry out a program for the development of industry. This credit will be used to purchase equipment for completion of certain power plants now under construction, additional equipment for copper wire and cement plants and agricultural machinery.

# The London **ECONOMIST**

## German Prisoners of War

THE steadily growing uneasiness in this country over the position of the German prisoners of war has had its effect. The [British] Government has announced a plan for speeding up the prisoners' repatriation which at least puts an end to their state of complete uncertainty about the future—an uncertainty which was rapidly becoming one of the principal causes of demoralization in the camps. Hitherto the rate of repatriation among the 394,000 Germans eligible to return to Germany has been running at about 3000 a month. After September this figure was increased, for the present, to 15,000 a month. If there is to be any acceleration later, it will be the subject of a separate announcement. In general, the white prisoners—those who have shown a positive attitude towards democracy—will be repatriated first. Thereafter the principal criterion will be length of captivity, with some special categories for cases of particular hardship or for those whose skills are especially needed in the rebuilding of Germany.

Since it will take over 2 yr to get the eligible prisoners home, their disappearance is not expected to affect the British labor situation too drastically. The Ministry of Works at present employs only about 34,000, and the Service Dept. just over 100,000. But in one field—agriculture—the Ministry is apparently perturbed at the prospect of losing, however gradually, its more or less skilled labor force of 158,000 men. Those whose "good conduct" has permitted them to be billeted with farmers will presumably be among the first to go, and neither the recruiting campaign for the Women's Land Army nor the plans for retraining ex-servicemen have received a satisfactory response.

But it is essential that no British need, however legitimate, should stand in the way of rapid liquidation of the problem of maintaining prisoners of war on forced labor. By it, slavery has all but returned to Western Europe. It was not the intention of statesmen and military

leaders to allow such a state of affairs to arise, but the drift of circumstance lay in that direction and they have drifted with it. The fact that Germany has not yet been given a peace, and is not likely to receive one for years to come, gives a cloak of pseudo-legality to the procedure of maintaining men at work as prisoners years after the end of war, for, under the Geneva Convention, the use of prisoner-of-war labor becomes illegal only after the signing of a peace. But the Geneva Convention was not designed to deal with a situation in which the central government of the defeated nation disappears and there is no effective authority with which to conclude a peace. Nazi practice naturally enhanced the drift towards the employment of slave labor. Not only did the Nazi Government itself resort to slave labor on a massive scale, but its armies so devastated neighboring countries and so decimated their people that it was inevitable and justified that the most devastated should seek for reparations in kind in the shape of putting German prisoners of war to work. In Russia, where devastation probably reached its peak, no political traditions or scruples stood in the way, since slave-labor colonies are part of the domestic penal system.

YET, however explicable and inevitable the drift towards slave labor may have been, it is essential to realize the scale upon which it is now being practiced by the Allies, and the grave abuses with which it has been accompanied. In the middle of this summer, a rough estimate of the number of Germans held as prisoners of war stood at the horrifying figures of over 5,000,000 men. Of these the great bulk were in Russia: 3,500,000 is the most generally quoted estimate. France had about a million, Great Britain and the British Empire about half a million. (The 378,000 prisoners formerly held in the United States have now been transferred to either Britain or France.)

The conditions under which they work vary, but are nowhere very

*Reprinted by special permission to further understanding on how political and economic affairs are viewed in London.*

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good. In Russia, the ordinary manual laborers among the prisoners of war suffer the disadvantages of living in a backward and battered community in which the inhabitants themselves live in miserable conditions. The mortality rate among the heavy workers is said to be high, and certainly the condition of some of the returned prisoners, when some 100,000 sick and crippled men were returned last summer, was found to be appalling.

On the other hand, the Russians are reported to treat skilled technicians, scientists and other prisoners of ability with leniency and relative freedom, and the condition of the 120,000 prisoners released in time for the elections in the Soviet zone—50 pct of whom have arrived—was certainly higher than that of the preceding batch of released men. However, many Germans are convinced that these releases are counterbalanced by the sending of able-bodied German men to Russia from the districts beyond the Oder. But since there is very little contact between the German prisoners and their homes, and no official statistics, it is difficult to give an accurate picture either of the scale or conditions of German labor in Russia. It is known to be very great and, in a country as wrecked as Russia, conditions are bound in the majority of cases to be bad.

The transfer of German prisoners of war from America to France has brought the French total up to nearly a million men, of whom over half a million are employed on reconstruction work and in agriculture and mining. Some 50,000 German miners are at work in the French mines and they, together with about 30,000 miners working in Belgium, roughly represent the

(CONTINUED ON PAGE 142)



## Says Oven Makers Gave Heat Treaters Thermal Flexibility

### Atlantic City, N. J.

• • • One of the greatest benefits that the oven manufacturer has given to the heat treating field is equipment designed so that a rapid change in desired operating temperatures for subsequent operations can be made, it was said by Herman Gehrich, vice-president of Gehrich & Gehrich, Inc., Woodside, N. Y. at the annual convention of the American Gas Assn. here recently.

Illustrating the need for flexibility in operating temperatures, Mr. Gehrich pointed out its importance in the heat treatment of aluminum alloy castings where many furnaces require from 6 to 8 hr to lower the temperature from a solution heat treatment at approximately 960°F to permit precipitation treatment at 350°F to be started.

It is not unusual, said Mr. Gehrich, for oven type furnaces of steel panel construction to make this sharp temperature change in approximately an hour. Temperatures up to 1200°F are customary for ovens employing alloy steel sheets for interior wall sections and sectional wall construction to minimize the effects of metal expansion and contraction under varying temperatures while holding through-wall heat losses to a minimum.

Most metals can be heated and heat treated on a considerably faster schedule than has been the practice, according to Frederick O. Hess, president, Selas Corp. of America, Philadelphia. During the past year a number of installations have been made using the differential method of heating for the continuous treatment of bar stock or tubing.

In manufacturing seamless tubing, reheating is normally required prior to final tube sizing since the temperature drops during piercing and initial tube forming from 2300° F to between 1200° F and 1400° F. In that temperature range the final sizing is difficult and may result in strains and non-uniformity of the tubing due to the lack of uniform temperature distribution.

One seamless tubing furnace installation operating at mill speeds has been made comprising a line of

14 furnaces built in short sections to permit handling equipment or guide rolls between. The installation is designed to handle tubing from 4 in. to 6 in. OD with wall thickness variation from 0.134 in. to 0.625 in. Reheating requirements are from 1200° F to 2000° F at a production rate of 60,000 lb per hr. Tube speeds vary from 30 to 60 ft per min, depending on wall thickness.

Automatic temperature control is by means of optical pyrometers in the furnaces which act to control subsequent furnaces in order to correct for variations in temperature due to delays in piercing or later stages of the operation. The short heating period has served to reduce the formation of scale sufficiently to benefit final sizing and surface condition of the tubing, Mr. Hess said.

In another 4-furnace installation for annealing stainless steel bars of 13/16 in. to 3 in. diam two or three of the furnaces are used to bring the steel up to temperature and the last two or one, depending on the bar size, are used as soaking furnaces. For the smallest size bar, the operating speed is 8 ft per min, that is 54 sec for heating up and 54 sec for soaking. Because of the high speed operation, 1000 lb per hr, grain growth is not a factor, said Mr. Hess, because metal temperature does not exceed conventional temperatures

although the furnaces are operated at 2400° F. A bar 2 $\frac{3}{8}$  in.-diam is handled at a speed of 0.95 fpm in a total time of 14.7 min.

This method of heat treatment covers the temperature range of 900° F to 1500° F so rapidly that no grain boundary carbides are precipitated, according to Mr. Hess, and therefore there is no necessity for a long soaking period at annealing temperatures.

Another installation for heat treating carbon steel bar stock employs two sets of furnaces; one for hardening the carbon steel in continuous production, the other for following it immediately with a draw. In the continuous furnace set-up, surface decarburization is eliminated because the total time the bars are at temperature is reduced to a few seconds.

In another installation  $\frac{7}{8}$  in. non-ferrous metal bars are passed through a 37 in. long radiant chamber maintained at 2500° F at a speed of 5 fpm, producing 1000 lb of bar stock per hr. The bars are water quenched and the 78 hardness of RB before annealing is reduced to 21 RB with less than a 40-sec exposure.

For industries whose manufacturing processes include drying, baking or low temperature heat treatment, the application of high volume air recirculation offers significant advantages according to a report by Richard J. Ruff of Young Bros. Co., Detroit. Recirculation at high velocities was said to reduce processing time, promote higher temperature uniformity and effect a closer control of the heating cycle.

Tests made to determine the rate of heating of a tightly wrapped coil of No. 9 gage aluminum wire indicated that with a recirculated air velocity of only 100 fpm, the center of the coil reached the oven air temperature of 340° F in 65 min. Without recirculation, it required three hours to bring the coil temperature within 15° of the control temperature. By this time the heating rate of the coil was extremely slow indicating that possibly several additional hours would be required to bring the work temperature up to oven temperature of 340° F. The coils were tightly wound and band-

### Peacetime Research

#### Washington

• • • "War accelerates the demand for research and for its military applications, but it affords little opportunity for fundamental research or the continuation of long-range peacetime programs. Total war, of course, demands federal domination of nearly all research and imposition of severe restrictions for security purposes. Today, with the immediate demands of war happily removed, we recognize a tremendously increased need in all fields of technologic and economic research, in order that the postwar goal of a secure and prosperous national economy for the American people may be realized."—Secretary of Interior J. A. Krug.

ed so that the temperature rise in the coil was the result of conduction from the external surface.

In another test an automobile transmission gear 3¾ in. diam by ¾ in. thick was drilled in the center in order to embed a thermocouple. In a 400° F non-recirculating type oven, 45 min was required to bring the gear temperature to 364° F.

### **Koppers Will Begin Styrene Operations At Kobuta, Pa., Plant**

Pittsburgh

• • • Koppers Co., Inc., will begin operation of the styrene part of the synthetic rubber plant at Kobuta, Pa., as soon as power is available in the district. It was intended to start operations on Oct. 15. Negotiations for the purchase of the plant by Koppers are about completed, and the purchase price is in the neighborhood of \$3,300,000.

In addition to the styrene production equipment, the company will have a 7½ yr lease to use certain office, laboratory, and shop facilities, as well as a steam generating plant, a river pumping station, tanks and other portions of the plant which the government is unwilling to sell at present.

Koppers operated the styrene plant during the war and since the wartime production of butadiene and styrene ended last December, no economical use is foreseen for the four butadiene units. Koppers did not make a bid on these facilities but is maintaining them for the government.

The plant will employ about 350 but it is expected that total employment will increase to about 500 as additional plant equipment is acquired. Of the 350 acres included in the Kobuta plant, 129 were purchased by Koppers and the government will permit the use of 83 additional acres.

During the war, Kobuta supplied more than 20 pct of the principal raw materials, styrene and butadiene, for production of synthetic rubber. A condition of Koppers purchase of the plant is that a substantial amount of the future production of styrene will be reserved for the Office of Rubber Reserve for synthetic rubber. During the first six months of private operation, 70 pct of the output will be available

Since the heating rate curve had flattened out appreciably it is estimated that an additional 45 min or more would be required to bring the gear to oven heat.

With the recirculating fan in operation providing a 300 fpm air velocity across the face of the gear the center of the gear was brought to 400° F in 10 min.

to the government and after that the reserve will amount to 50 pct of production.

### **Establishes 2-Yr Sheet Metal Training Course**

Peoria, Ill.

• • • Caterpillar Tractor Co. has established a new 2 yr sheet metal training course to develop applicants in the many phases of structural and sheet metal fabrication. The course involves both practical shop training and classroom instruction.

In the shop, trainees will be offered practical experience in work as blacksmith helper, punch and brake press helper and operator, shear helper, oxyacetylene cutter and welder, sheet metal layout and development worker, inspector and other similar duties.

Classroom studies include shop mathematics, blueprint reading, layout and development methods, company organization and department functions, industrial economics and related subjects.

**BENDING CLASS:** Bert Knight, Caterpillar blacksmith completes the bending operation on a frame for a screen guard as trainee Joseph G. Hare looks on.



Applicants for the course must successfully pass an entrance examination, must be between 20 and 32 yr of age, have a high school education or equivalent, and must have been employed by the company for at least 6 months.

### **Enameling Problems Discussed at Meeting**

Urbana, Ill.

• • • More than 200 members and guests of the Porcelain Enamel Institute attended the institute's annual forum held at the University of Illinois, Oct. 9 to 11. The meeting was opened Wednesday by an address of welcome by officials of the university and a brief discussion of the present status of the industry by R. H. Turk, Pemco Corp., president of the institute.

This was followed by three days of technical meetings which covered a wide variety of enameling problems. Among the subjects covered were: Cleaning and pickling methods, gaseous shielded arc welding, research on new test methods, use of portable conveyors, firing ground coats and cover coats together, de-enameling and reclaimed enamels. The forum's banquet featured an address by R. A. Weaver, Ferro Enamel Corp.

### **Housing Officials Face Reconversion Problems**

Chicago

• • • CPA officials have announced that many war veterans' homes started earlier this year will not be finished because of lack of materials. Speaking before a meeting of the reconversion problems school of the Chicago Assn. of Commerce, W. F. Stevens and H. W. Tomlinson explained that building supplies continue to trail far behind demand despite production of materials at a rate that is somewhere near double the rate as of VJ-Day.

The speakers said that the new restrictions which became effective Oct. 7, were necessary in order to speed new housing. As of Sept. 1, Tomlinson said, "Production of brick was up 117 pct; clay sewer pipe, 76 pct; cast iron soil pipe, 140 pct; structural clay tile, 71 pct; cast iron radiation, 171 pct; warm air furnaces, 103 pct; bathtubs, 174 pct; sinks, 207 pct, as compared to VJ-Day."



## Industrial Briefs...

• **ANNIVERSARY** — L. L. Ensworth & Son, Inc., Hartford, founded in 1801, steel and mill distributors, is now celebrating 145 yr of progress. The company operates three plants.

• **CED APPOINTMENT**—Roy C. McKenna, president and chairman of the board of Vanadium Alloys Steel Co., Latrobe, Pa., has been appointed chairman of the Committee for Economic Development for western Pennsylvania.

• **ON THE BALL**—Aetna Ball & Roller Bearing Co., Chicago, has purchased and installed additional equipment at a cost of \$130,000 which will increase production 33 pct over prewar levels. Barring unforeseen bottlenecks, ball and roller bearing companies which have been operating about pre-war capacity and with no reconversion problems, will end this year with a much better record than in 1945.

• **MORE DIE CASTINGS** — The Aluminum Co. of America has announced that the company has filed application with CPA to erect a die casting plant in Hillside, Ill. The new plant will include manufacturing, service and office buildings and is being added to Alcoa's facilities because of the large increased demand for aluminum die castings.

• **TO REDEEM DEBENTURES** — Aluminum Co. of America announced that, as part of its program of liquidating its war debt, it is redeeming on Nov. 12 the outstanding \$76.2 million 3 pct debentures, due Oct. 1, 1963. These debentures are held by 16 insurance companies.

• **OUTDOOR MOTORS** — Allis-Chalmers Mfg. Co., Milwaukee, is now producing a complete line of outdoor weatherproof, totally enclosed motors in sizes ranging up to and above 2000 hp. Complete redesign of the ventilation heat-transfer system is the principal change in the new line of motors in the larger ratings.

• **BUYS 12 BUILDINGS**—Twelve steel-frame buildings, built by the government to expand magnesium production facilities of the Dow Chemical Co. during the war, have been sold to the firm for \$1,498,743 cash, according to WAA. The sale included buildings, located on Dow land and adjoining an existing Dow plant at Freeport, Tex., together with 327 items of equipment such as transformers, motors, boilers, etc.

• **VETERANS' GUIDE**—WAA has issued a 12-page booklet, entitled "Veterans—Your Guide to Surplus Property," which tells veterans of World War II how they can exercise their exclusive opportunity to buy for personal use many items of surplus property in short supply. The booklet is free on request at WAA centers.

• **SEVEN BIDS RECEIVED**—WAA has received seven bids to buy or lease the \$56 million, government-owned magnesium plant in Velasco, Tex. The plant has a rated capacity of 72 million lb of magnesium metal per year and WAA said that because of the complexity of the bids and the importance of the plant, several weeks will be required before an award is made.

• **HARVESTER EXPANDS** — The Rock Falls works of the International Harvester Co., at Rock Falls, Ill., will be substantially enlarged over the next 2 yr by the transfer of the entire line of disc and harrow production from other plants of the company. Substantial plant modernization and rearrangement are involved with the entire cost of the program estimated at \$725,000.

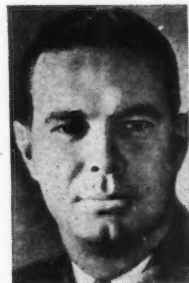
• **NEW SALES OFFICES** — The Continental Foundry & Machine Co., Pittsburgh and East Chicago, Ind., has announced the establishment of sales offices in the Lincoln-Liberty Bldg. in Philadelphia.

Harry G. Uphouse has been named Eastern sales manager for the company's industrial and miscellaneous castings.

## Announces Resignation Of C. S. Fletcher As Director of the CED

New York

• • • The resignation of C. Scott Fletcher as executive director of the Committee for Economic Development was announced recently by its chairman, Paul G. Hoffman. Mr. Fletcher has been elected president of Encyclopaedia Britannica Films, Inc., with offices in Chicago, and will assume his new duties at once. He will be associated with CED as a trustee and as a member of its research and policy committee, Mr. Hoffman said.



C. Scott Fletcher

Under Mr. Fletcher's leadership more than 2900 local CED's were formed in the 3 yr prior to VJ-Day. These committees, with more than 70,000 members, worked to speed reconversion after victory and to create more productive jobs in their respective areas than existed before World War II. After serving first as director of the CED field development program, Mr. Fletcher later became executive director and continued in that capacity until he resigned.

In his new position Mr. Fletcher plans a large scale program of expansion and intensification of all of the visual educational activities of Encyclopaedia Britannica Films. He succeeds E. H. Powell as president, the latter, who also is president of Encyclopaedia Britannica, becoming chairman of the board of the films corporation. Prior to World War II Mr. Fletcher was general sales manager of the Studebaker Corporation. He went with CED in 1942 as a war-time service and has now returned to private business.

## Wertz Named Chairman

• • • Orrin Benson Wertz, executive secretary of National Screw Machine Products Assn., has been named chairman of the public relations committee of the manufacturing trades group of the National Industrial Council.

## Construction Steel...

### Boston

••• Construction involving round tonnages of fabricating steel is at a minimum due to the tight steel situation and to controls on building material. Mill representatives profess to see no loosening up of business the remainder of this year. Approximately 90 pct of construction work coming into the market is resident.

### New York

••• Fabricated steel awards this week included the following:

- 3900 Tons, Chester, Pa., Philadelphia Electric Co., gas holder of 10 million cu ft capacity, to Bethlehem Steel Co., Bethlehem, Pa.
- 1500 Tons, San Francisco, Mission Exchange Building, Pacific Telephone & Telegraph Co., to American Bridge Co., Pittsburgh.
- 1000 Tons, Vernon, Calif., storage silos for General Mills, through Bechtel Bros. & McCone, to Consolidated Steel Corp., Los Angeles.
- 815 Tons, Buffalo, addition to Mercy Hospital, to Bethlehem Steel Co., Bethlehem, Pa.
- 640 Tons, Omaha, Neb., Memorial Stadium to American Bridge Co., Pittsburgh.
- 480 Tons, Whiting, Ind., coke plant, Standard Oil of Indiana, to American Bridge Co., Pittsburgh.
- 400 Tons, Dallas, bridge, Texas State Highway Dept., to Virginia Bridge Co., Roanoke, Va.
- 125 Tons, Bridgeport, Pa., addition to plant of Sharples Co., Barclay White general contractor, to Cantley & Co., Philadelphia.
- 100 Tons, Boston, dormitory for New England Baptist Hospital to Lehigh Structural Steel Co., Allentown, Pa.

••• Fabricated steel inquiries this week included the following:

- 800 Tons, Chicago, wholesale grocery and plant for Sprague Warner Co.
- 400 Tons, Huntington Park, Calif., Southern California Telephone Co., Lafayette exchange building addition.
- 205 Tons, Cambria County Pa., Pennsylvania Dept. of Highways, bridge, Route 53, opened for rebidding on Nov. 8.
- 150 Tons, Northampton, Mass., boiler house for Smith College, George A. Fuller Co., Boston engineer.
- 120 Tons, Cambria County, Pa., Pennsylvania Dept. of Highways, bridge, Route 221, opened for rebidding on Oct. 25.

••• Reinforcing bar awards this week included the following:

- 883 Tons, Long Beach, Calif., Willow St. bridge, to Blue Diamond Corp., Los Angeles.
- 750 Tons, Vernon, Calif., United-Rexall Drug Co. warehouse, to Soule Steel Co., San Francisco.
- 700 Tons, Sioux Falls, S. D., hospital for Veterans Administration, all bids have been rejected. Another hospital for the Veterans Administration in Fargo, N. D., is up for bidding; tonnage not yet figured; estimated 600 to 700 tons.
- 340 Tons, Los Angeles, Avon Products new building to Ceco Steel Products Corp., Omaha, Neb.
- 300 Tons, Evanston, Ill., Rothschild Store to Arthur C. Wieboldt.
- 200 Tons, San Diego, Coca Cola building, to Truscon Steel Co., Youngstown, Ohio.
- 103 Tons, Newport Beach, Calif., Southern California Telephone Co. addition, to Ceco Steel Products Corp., Omaha, Neb.
- 100 Tons, Long Beach, Calif., piles for new bridge, to Blue Diamond Corp., Los Angeles.
- 100 Tons, bridge for Alabama State Highway Dept. in Jackson County, Ala., split between Truscon Steel Co. and Alabama Steel Co., both of Birmingham.

••• Reinforcing bar inquiries this week included the following:

- 175 Tons, Casper, Wyo., miscellaneous bars, Kortes Dam, Bureau of Reclamation, Denver, Inv. 19518-A, bids open Oct. 24.

## New Turbine Factory To Cost \$20 Million

### Schenectady

••• A \$20 million factory for the manufacture of steam turbines and electric generators will be built at the General Electric Co.'s Schenectady works. Construction is expected to begin this year and it is estimated that the plant will be completed in about 20 months, with installation of new equipment requiring an additional 6 to 9 months.

The turbines manufactured will range from 10,000-kw to 200,-

000-kw capacity. The assembled weight of one of these larger units will be about 760,000 lb, and its generating capacity could furnish light and power to a city of 600,000 population.

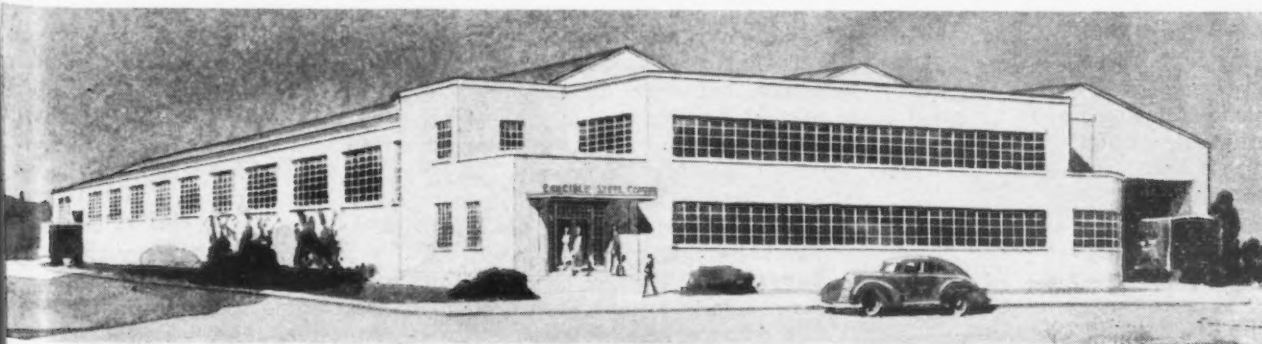
With a frontage of 650 ft, the building will be 1290 ft, or nearly a quarter-mile long, and will cover approximately 19 acres. To support the tremendous weight of the building and its heavy equipment and products in process of manufacture, very heavy foundations and extensive pilings will be required. There will be approximately 57,000 of these piles, some reaching down 140 feet to the bed rock of the Mohawk Valley.

Unusually heavy structural steel will be necessary for the superstructure. Much new equipment will be installed in addition to that moved from buildings at present used to house turbine manufacturing activities. The shop will have a wide variety of machine tools from the smallest bench grinder to a 40-ft boring mill capable of machining castings weighing approximately 200 tons.

There will be 12 test stations, each equipped to test any of the turbine units manufactured in this building. A pumping station with intake crib will be built at the Mohawk River to supply 30,000 gal of water a minute for condensing exhaust steam from the turbines in process of being tested. Steam will be supplied at 400-lb pressure for driving turbines.

When the installation is completed, approximately 3,000 will be employed in the shop and offices, though the number may vary with changing business conditions.

NEW CHICAGO WAREHOUSE: Crucible Steel Co. of America recently opened this new warehouse and office building, its third expansion in Chicago since the turn of the century. It is located at 4501 West Cortland St.





# MACHINE TOOLS

... News and Market Activities

## To Set Up Strategic Machine Tool Reserve

• • • Disciples of stand-by equipment for the armed forces got a boost this week when it was announced in Cincinnati that the Air Materiel Command, at Wright Field, Dayton, would store 12,500 machine tools for use in any future emergency.

Coming as one of the first definite moves by any of the armed forces toward establishment of a strategic machine tool reserve, the news found some approval among Cincinnati machine tool builders.

An estimated 60,000 machine tools owned by the government at the close of the war are being surveyed by the AAF Materiel Command's skilled personnel to determine which items should be placed on reserve. The tools are now located in government-owned aircraft plants, military depots and War Assets Administration warehouses all over the country.

B. N. Brockman, vice-president, R. K. LeBlond Machine Tool Co., Cincinnati, said that Cincinnati machine tool builders were not alone in their approval of the plan to store government-owned machinery for emergencies.

Robert Alter, vice-president, American Tool Works, was another in accord with the idea. Frederick V. Geier, president, Cincinnati Milling Machine Co., said the plan was absolutely necessary.

There was, however, some question as to what types of machine tools would be stored and whether or not the tools stored would be obsolete at the time of any future emergency.

Cincinnati plants have a considerable backlog of orders for the most part and are operating as near capacity as the supply of raw materials will permit. Employment at present approximates the prewar levels, but there is evidence that it would be higher if materials were in good supply.

Sales of machine tools by WAA amounted to about \$542,000 for the week ended Oct. 11. Included in this figure were grinding machines, milling machines, lathes,

broaching machines, purchased primarily by firms in Cincinnati, Columbus and Indianapolis.

Generally, foreign business is in about the same levels of the last few months, although when UNRRA goes out of existence it is not unlikely that some change downward will take place.

September figures for the machine tool industry show little change from August. Shipments amounted to \$25,400,000 compared with \$26,900,000 in August. Orders also went down a bit, September bookings totaling \$23,000,000 compared with \$26,200,000 for August. Cancellations amounted to \$3,000,000 compared with \$4,000,000 in August. Unfilled orders amounted to \$179,000,000. Of September shipments, 21 pct were foreign.

According to reports from the trade, stop orders on machine tools for the plant in Cleveland, which were originally to be continued for 60 days, have been extended for six months.

WAA's move in cutting prices on such items as the agency considers in long supply is the subject of wide divergence of opinion in the industry. Some observers feel the sooner the surplus is absorbed and put to work, the better it will be for the industry. Others, however, are quite irked over the fact that WAA's move will make it increasingly difficult to sell new equipment during the next 12 months.

There is the possibility that with prices reduced to about 20% on the dollar on some units, machine tool builders will be able to step in and buy for rebuilding. Some companies tried to buy for rebuilding before WAA cut the prices, but with no success, but perhaps a change in policy or whatever is required, will follow with the reduced prices.

In Detroit, the volume of new orders for standard tools purchased in this area has fallen off somewhat, although the demand for special tooling shows no definite signs of weakness other than

changes brought about by the suspension of light car programs.

Some dealers selling surplus are fearful that new government regulations calling for screening of orders prior to purchase will greatly retard surplus sales, although a spokesman for the local WAA office says this has not happened yet and such a development is not looked for in the near future.

Some machine tool suppliers were officially notified by General Motors this week that tooling orders for the Chevrolet light car have not been canceled, but that such agreement to purchase has been postponed for 6 months.

Rumors circulated widely here to the effect that electric motors have been stripped from surplus machines have proved to be entirely unfounded. The lack of motors is explained by the fact that Ford originally furnished the motors for a large amount of Willow Run equipment and naturally took the motors back when the equipment was turned over to surplus.

Ford Motor Co., has purchased for \$7,598,209 miscellaneous machinery, machine tools and special equipment from the War Assets Administration, according to an announcement by Harry F. Eckfeld, Detroit regional WAA director.

In the Boston area, it seems certain October sales collectively will top those of September, an event distributors have not been able to record in several months. The increase will not be impressive, but nevertheless, important. Makers of practically every type of tools have booked business this month with emphasis on the lower cost equipment.

Also encouraging is a greater number of large quotations than a month ago and a pronounced curtailment in surplus government tool offerings. Tool manufacturers continue to report shortages of castings and other materials but this situation is not as serious as it was Oct. 1. While the actual improvement in business has been heartening, the big uplift comes from Washington developments.

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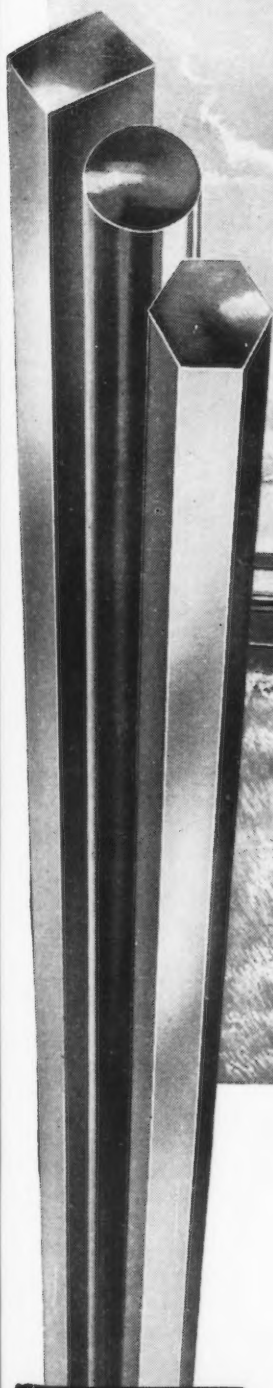
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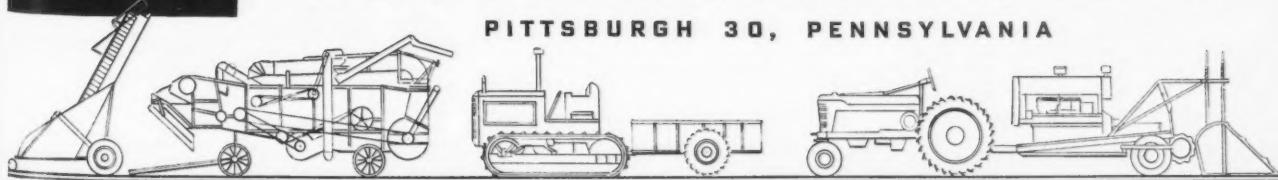
**J&L  
STEEL**



FARM COMBINE IN ACTION cutting grain, threshing it, elevating it to hopper bin to be placed in bags and picked up by truck. Many parts of Cold Finished steel are used in both tractors and combines, without which machinery today's great harvests would be impossible.

Experience and proper equipment are indispensable in the production of steels for cold working. At J&L the steel used in cold finishing operations is specially selected to be cold drawn, turned and ground, turned and polished or cold rolled. This is one reason why J&L Cold Finished steel is easy to machine, why you have fewer tool changes when making parts for agricultural implements, automobiles, home appliances and business machines. Write for information.

**JONES & LAUGHLIN STEEL CORPORATION**  
PITTSBURGH 30, PENNSYLVANIA





# NONFERROUS METALS

... News and Market Activities

## Gain in Zinc Receipts Depends on OMR Action

New York

••• Despite the 1.00¢ per lb price increase granted to zinc producers starting Oct. 14, the trade is under the impression that there should be little improvement in shipments to galvanizers unless it encourages the Office of Metals Reserve to convert additional tonnage of zinc ores held in stockpiles throughout the country. Producers who have been holding back on shipments of zinc to galvanizers and brass mills are starting to ship now but their tonnage is restricted by manpower shortages at the mines and smelters. It is expected that the price increase will be canceled out for most producers by compensating adjustment of the Premium Price Plan. The one producer who continued to make shipments within the limits of capacity has been handicapped recently by the power strike in Pittsburgh. Now it appears that there may be another few days to a week delay in returning the furnaces to production. Producers are not taking care of any new customers and are referring inquiries to OMR for their requirements. However, it is understood that the agency is not making shipments of Prime Western, Brass Special, Intermediate or Special High Grade.

## Magnesium Plant Offered

Washington

••• WAA has announced that bidding for the purchase or lease of the government's magnesium plant in Spokane, Wash., will close at 4 P.M. (PST), Dec. 2. The plant, advertised for disposition in April, has a rated capacity of

48 million lb of magnesium and an equal amount of ferrosilicon per year. The Electro Metallurgical Co. operated the plant during the war, taking raw materials from an adjacent 330-acre dolomite quarry which is included in the offer.

## Telephone, Cable Scrap Up

Washington

••• The ceiling price of lead-covered telephone and power cable scrap sold on a flat price basis has been raised by OPA from 6.04¢ to 7.54¢ per lb, effective Oct. 26. The increase conforms with those made in maximum prices of copper scrap, copper alloy scrap and lead scrap on June 3, 1946, and is necessary to reflect the price increases in the grades of lead scrap and copper scrap present in the cable. The alternate method of analysis and formula pricing of scrap cable was adjusted on June 3, 1946, to reflect these price increases but a corresponding increase in the flat price was overlooked at that time, OPA said.

## Increase Nickel Output

Toronto

••• To cope with increasing demand for nickel and copper, International Nickel Co. of Canada is substantially expanding production. The company has brought two more reverberatory furnaces into operation and now has six out of seven in operation. While current production is a long way short of the high pressure output of the war years, it is somewhat ahead of prewar years.

With six furnaces in operation, production of nickel will run be-

tween 17 and 18 million lb a month, an increase of about 40 pct from low levels that prevailed since early last year. At the wartime peak the company's nickel output ran 23 to 24 million lb monthly.

Copper production by International Nickel is expected to return to the prewar level of 25 million lb a month. For a time in 1945 the company's copper output fell as low as 15 million lb monthly. In 1941 the company attained its all time peak of 29 million lb a month.

The Canadian pegged copper price continues at 11.5¢ compared with 16.5¢ to 17¢ in foreign markets.

## Lead

••• The shortage of lead is still the most severe among the non-ferrous metals and the latest evidence of the desperate condition of producers is the closing down of the Willard Storage Battery plant at Cleveland for two days last week for lack of lead and the probability of its closing another two days this week. The industry estimates that domestic consumers could use more than twice the monthly supply or 45,000 tons now made available. The industry committee met with the Tin, Lead, and Zinc Division on Oct. 22 to work out the November allocations but results of the conference have not yet become available. Most producers in the Far West are badly handicapped by a severe manpower shortage.

## Raise Tin Export Markups

Washington

••• OPA has raised ceiling prices for export sales of pig tin by jobbers and distributors who buy tin from the Office of Metals Reserve in order to conform with a requirement of the Price Control Extension Act that resellers' average Mar. 31, 1946, markups be retained.

Effective Oct. 26, exporting resellers have been provided with percentage additions to acquisition costs that vary with the quantity sold.

Nonferrous Metals Prices

Cents per pound

	Oct. 16	Oct. 17	Oct. 18	Oct. 19	Oct. 21	Oct. 22
Copper, electro., Conn. ....	14.375	14.375	14.375	14.375	14.375	14.375
Copper, Lake, Conn. ....	14.375	14.375	14.375	14.375	14.375	14.375
Tin, Straits, New York ....	52.00	52.00	52.00	....	52.00	52.00
Zinc, East St. Louis ....	9.25	9.25	9.25	9.25	9.25	9.25
Lead, St. Louis ....	8.10	8.10	8.10	8.10	8.10	8.10

## NONFERROUS PRICES

### Primary Metals

(Cents per lb, unless otherwise noted)

Aluminum, 99+%, f.o.b. shipping point (min. 10,000 lb) .....	15.00
Aluminum pig, f.o.b. shipping point .....	14.00
Antimony, American, Laredo, Tex. .....	14.50
Beryllium copper, 3.75-4.25% Be; dollars per lb contained Be .....	\$14.75
Beryllium aluminum, 5% Be; dollars per lb contained Be .....	\$30.00
Cadmium, del'd .....	\$1.25
Cobalt, 97-99% (per lb) .....	\$1.50 to \$1.57
Copper, electro, Conn. Valley .....	14.375
Copper, electro, New York .....	14.135
Copper, lake, Conn. Valley .....	14.375
Gold, U. S. Treas., dollars per oz. .....	\$35.00
Indium, 99.8%, dollars per troy oz. .....	\$ 2.25
Iridium, dollars per troy oz. .....	\$125.00
Lead, St. Louis .....	3.10
Lead, New York .....	3.25
Magnesium, 99.9+%, carlots .....	20.50
Magnesium, 12-in. sticks, carlots .....	27.50
Mercury, dollars per 76-lb flask, f.o.b. New York .....	\$96 to \$98
Nickel, electro, f.o.b. refinery .....	35.00
Palladium, dollars per troy oz. .....	\$24.00
Platinum, dollars per troy oz. .....	\$72.00
Silver, New York, cents per oz. .....	90.125
Tin, Straits, New York .....	52.00
Zinc, East St. Louis .....	9.25
Zinc, New York .....	9.69
Zirconium copper, 6 pct Zr, per lb contained Zr .....	\$ 6.00

### Remelted Metals

(Cents per lb)

Aluminum, No. 12 Fdy. (No. 2) .....	14.25
Piston alloys, No. 122 .....	14.50 to 14.75
AXS 679 .....	14.75
Aluminum, deoxidizing No. 4 .....	13.00 to 13.50
Brass ingot—selling prices	
85-5-5-5 (No. 115) .....	15.75
88-10-2 (No. 215) .....	19.00
80-10-10 (No. 305) .....	18.50
No. 1 Yellow (No. 405) .....	12.75

### Copper, Copper Base Alloys

(Mill base, cents per lb)

	Extruded shapes	Rods	Sheets
Copper .....	25.66	25.81	25.81
Copper, H.R. ....	22.16	22.16	22.16
Copper drawn .....	23.16	23.16	23.16
Low brass, 80% .....	24.35	24.66	24.66
High brass .....	23.67	23.67	23.67
Red brass, 85% .....	24.67	24.98	24.98
Naval brass .....	23.84	22.59	28.53
Brass, free cut .....	18.53	18.53	18.53
Commercial, bronze .....	25.50	25.81	25.81
Manganese bronze .....	27.45	25.95	32.03
Phosphor bronze, A, B, 5% .....	43.70	43.45	43.45
Muntz metal .....	23.59	22.34	26.78
Everdur, Herculey, Olympic or equal .....	29.82	30.88	30.88
Nickel silver, 5% .....	34.44	32.33	32.33
Architectural bronze .....	22.50	22.50	22.50

### Aluminum

(Cents per lb, base, subject to extras for quantity, gage, size, temper and finish)

Drawn tubing: 2 to 3 in. OD by 0.065 in. wall: 3S, 43.5¢; 52S-O, 67¢ 24S-T, 71¢; base, 30,000 lb.

Plate: ¼ in. and heavier: 2S, 3S, 21.2¢; 62S, 24.2¢; 61S, 23.8¢; 24S, 24S-AL, 24.2¢; 75S, 75S-AL, 30.5¢; base, 30,000 lb and over.

Flat Sheet: 0.136-in. thickness: 2S, 3S, 23.7¢; 52S, 27.2¢; 61S, 24.7¢; 24S-O, 24S-OAL, 26.7¢; 75S-O, 75S-OAL, 32.7¢; base, 30,000 lb and over.

Extruded Solid Shapes: factor determined by dividing the perimeter of the shape by its weight per foot. For factor 1 through 4, 3S, 26¢; 14S, 32.5¢; 24S, 35¢; 53S, 61S, 28¢; 63S, 27¢; 75S, 45.5¢; base, 30,000 lb.

Wire, Rod and Bar: screw machine stock, rounds, 17S-T, ¼ in., 29.5¢; ½ in., 27.5¢; 1 in., 26¢; 2 in., 24.5¢; hexagons, ¼ in., 35.5¢; ½ in., 30¢ 1 in., 27¢; base, 5000 lb. Rod: 2S, 3S, 1¼ to 2½ in.

(Continued. See Next Column)

diam, rolled, 23¢; cold-finished, 23.5¢ base, 30,000 lb. Round Wire: drawn, coiled, B & S gage 17-18: 2S, 3S, 33.5¢; 56S, 39.5¢; 10,000 lb base; B & S gage 00-1: 2S, 3S, 21¢; 56S, 30.5¢; B & S 15-16: 2S, 3S, 32.5¢; 56S, 38¢; base, 30,000 lb.

## NONFERROUS SCRAP METAL QUOTATIONS

†(OPA basic maximum prices, cents per lb., f.o.b. point of shipment, subject to quality, quantity and special preparation premiums—other prices are current quotations)

### Copper, Copper Base Alloys

#### OPA Group 1†

No. 1 wire, No. 1 heavy copper .....	11.50
No. 1 tinned copper wire, No. 1 tinned heavy copper .....	11.50
No. 2 wire, mixed heavy copper .....	10.50
Copper tuyeres .....	10.50
Light copper .....	9.50
Copper borings, No. 1 .....	11.50
No. 2 copper borings .....	10.50
Lead covered copper wire, cable .....	6.04*
Lead covered telephone, power cable .....	6.04*
Insulated copper .....	6.04*

#### OPA Group 2†

Bell metal .....	17.25
High grade bronze gears .....	15.00
High grade bronze solids .....	15.00
Low lead bronze borings .....	14.75
Babbitt lined brass bushings .....	14.75
High lead bronze solids .....	14.75
High lead bronze borings .....	12.50
Red trolley wheels .....	12.50
Tinny (phosphor bronze) borings .....	12.25
Tinny (phosphor bronze) solids .....	12.25
Copper-nickel solids and borings .....	11.00
Bronze paper mill wire cloth .....	11.25
Aluminum bronze solids .....	10.75
Soft red brass (No. 1 composition) .....	10.75
Soft red brass borings (No. 1) .....	10.75*
Gilding metal turnings .....	10.25
Contaminated gilded metal solids .....	10.25
Unlined standard red car boxes .....	10.00
Lined standard red car boxes .....	9.50
Cocks and faucets .....	9.50
Mixed brass screens .....	9.50
Red brass breakage .....	9.25
Old nickel silver solids .....	7.60
Old nickel silver borings .....	7.50
Copper lead solids, borings .....	6.75
Yellow brass castings .....	7.50
Automobile radiators .....	8.75
Zincy bronze solids, borings .....	9.75

#### OPA Group 3†

Fired rifle shells .....	9.50
Brass pipe .....	8.75
Old rolled brass .....	8.25
Admiralty condenser tubes .....	8.50
Muntz metal condenser tubes .....	8.00
Plated brass sheet, pipe reflectors .....	7.50
Manganese bronze solids .....	7.65*
Manganese bronze solids .....	6.65*
Manganese bronze borings .....	6.90

#### OPA Group 4†

Refinery brass .....	6.00*
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\*Price varies with analysis. †Lead content 0.00 to 0.40 pct. ‡Lead content 0.41 to 1.00 pct.

### Magnesium

Sheet, rod, tubes, bars, extruded shapes subject to individual quotations. Metal turnings: 100 lb or more, 46¢ a lb; 25 to 90 lb, 56¢; less than 25 lb, 66¢.

### Brass Mill Scrap†

Briquetted cartridge brass turnings .....	10.375
Cartridge brass turnings, loose .....	9.625
Loose yellow brass trimmings .....	9.625

### Aluminum

#### Plant scrap, segregated

2S solids .....	11.00 to 11.50
Dural alloys, solids 14, 17, 18, 24S, 25S .....	8.50 to 9.00
turnings, dry basis .....	7.50 to 8.00
Low copper, alloys 51, 52, 61, 63S solids .....	9.50 to 10.00
turnings, dry basis .....	8.50 to 9.00

#### Plant scrap, mixed

Solids .....	8.50 to 9.00
Turnings, dry basis .....	7.50

#### Obsolete scrap

Old sheet and utensils .....	9.50
Old castings and forgings .....	8.50 to 9.00
Pistons, free of struts .....	8.50

### Magnesium\*

#### Segregated plant scrap

Pure solids and all other solids, exempt Borings and turnings .....	1.50
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#### Mixed, contaminated plant scrap

Grade 1 solids .....	3.00
Grade 1 borings and turnings .....	2.00
Grade 2 solids .....	2.00
Grade 2 borings and turnings .....	1.00

\*Nominal.

### Zinc†

New zinc clippings, trimmings .....	8.00
Engravers, lithographers plates .....	9.00
Old zinc scrap .....	6.50
Unswaged zinc dross .....	6.55
Die cast slab .....	6.55
New die cast scrap .....	5.70
Forming and stamping dies .....	5.70
Radiator grilles, old and new .....	5.70
Old die cast scrap .....	5.25

### Lead

Deduct 1.40¢ a lb from refined metal basing point prices for refinery charge on used battery plates.

Soft lead scrap .....	7.50
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### Nickel

Ni content 98+%, Cu under ¼%, 23¢ per lb; 90 to 98% Ni, 23¢ per lb contained Ni.

## ELECTROPLATING ANODES AND CHEMICALS

### Anodes

(Cents per lb, f.o.b. shipping point in 500 lb lots)

Copper, frt. allowed	
Cast, oval, 15 in. or longer .....	29.75
Electrodeposited .....	23.47
Rolled, oval, straight, delivered .....	23.72
Curved, 18 in. or longer, delivered .....	23.72
Brass, 80-20, frt. allowed	
Cast, oval, 15 in. or longer .....	27.25
Zinc, cast, 99.99 .....	17½
Nickel, 99 pct plus, frt. allowed	
Cast .....	47
Rolled, depolarized .....	48
Silver, 999 fine	
Rolled, 1000 oz lots, per oz. ....	93½

### Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 1-5 bbls .....	34.00
Copper sulphate, 99.5, crystals, bbls .....	7.75
Nickel salts, single, 425 lb bbl: frt. allowed .....	13.50
Silver cyanide, 100 oz lots, per oz. ....	0.749
Sodium cyanide, 96 pct, domestic, 125 lb drums .....	15.00
Zinc cyanide, 100 lb drums .....	33.00
Zinc sulphate, 89 pct, crystals, bbls, frt. allowed .....	6.35



# SCRAP

... News and Market Activities

## CPA Inventory Control Now in Effect

### New York

•••The Civilian Production Administration's scrap inventory control plan officially became effective on Oct. 22. Under it openhearth melting stocks in hands of consumers will be limited to a 45-day supply, while foundry cast stocks will be restricted to enough for 30 days' operation.

Under the new regulation dealers will not be permitted to buy any more scrap in one month than they can ship out in the following two. Enforcement of the ruling will be in the hands of CPA's Compliance Div.

On the control of inventories at consumer's plants observers saw little change in the situation since few, if any, have inventories of the size mentioned in the regulation.

Dealers who have heavy stocks of prepared material on hand will not be adversely affected by the new amendment provided they can balance receipts with shipments in the ratio required by the order.

Washington sources scouted faint hopes of scrap decontrol in the near future on the grounds that steel prices would have to be decontrolled first. The government has indicated that building materials will be among the last items decontrolled and these would include both steel and cast iron products.

**PITTSBURGH**—Talk of decontrol of prices has had an immediate effect on the movement of scrap, with those who can afford it holding back on shipments in the hope that the price lids will be lifted. Practically all mills in the area are now permitted to buy low phos scrap, so that the OPA ruling that openhearth operators could not use low phos is so much bilge. With permission to buy low phos, mills again see evidence of overgrading so that the situation is very similar to that prior to the last scrap rulings from Washington. Auto wreckers are saving everything that looks like a usable auto part, so that scrap from this source is negligible. Mills here report incoming shipments are as low as 25 pct of their daily requirements.

**CHICAGO**—The scrap market in this area has been very quiet for the past week. Practically all foundries are operating on a shoestring basis and seem to be in worse shape than the mills. Cast scrap is practically non-existent and al-

though it might be available to the dealers the fact that the average pickup is about 8 to 1 of steel to cast in any collection, there is little incentive to go and get it despite the recent increase in cast prices. There is a general feeling that scrap is being held awaiting decontrol and the return to an open market. About the only thing that will break the scrap market would be a substantial cut in the steel operating rate due to cancellation or postponement of finished steel deliveries.

**PHILADELPHIA**—Early reaction of the scrap trade to the inventory limitation program is that so far as it applies to consumers it is likely to be ineffectual as no mill in the country is believed to have more than 45 days requirements of openhearth and 30 days of cast, and the foundries are known to be operating on a day-to-day basis. Dealers are uncertain how the limitation of their receipts can be controlled when apparently there is no provision for inventory report forms. Dealers consider that the action will not affect the scrap shortage and believe that the only practicable solution would be a price rise to bring out more scrap at the collector level. There is some indication that some dealers may be reluctant to ship scrap pending some definition of the accelerated decontrol policy with respect to metals.

**DETROIT**—As predicted, the recent 40-pct slash in Chrysler operating schedules has had a noticeable effect on the amount of scrap being generated in Chrysler plants and in the plants of Chrysler's suppliers. Other than this change, the volume of scrap being moved remains about the same. While the recent abandonment of some government price controls is expected eventually to result in scrap holding by dealers there is as yet no indication that this is being done on an appreciable scale. Some improvement in the volume of cast steel scrap is reported but No. 1 cast iron scrap has again dried up after a short spurt in response to the recent price increase.

**NEW YORK**—Shipments from this district are running at about the same rate as they have in the past few weeks and some dealers report that the trucking strike is still interfering somewhat with collections. The Navy handed a few lucky dealers and brokers a juicy plum when it decided that contracts for unprepared scrap which had been awarded recently at prices above the unprepared ceiling would be carried out at the unprepared ceiling prices. WAA's New York office is offering 6832 tons of steel scrap in sale No. C-1108, with bids opening Oct. 28.

**BOSTON**—A lack of cars and a reborn hope that ceilings will be removed have thrown new business for a loss. Aside from cleaning up old orders, the trade might just as well be at home. The past week was one of the flattest on record

except, perhaps, when this area was buried under snow and ice. On old orders, turnings go as "shoveling" and the shipper pockets \$2 a ton extra. Skeleton, as low as phos, also nets shippers a premium. Cast has lost its identity; scarcity has made it a "precious" metal.

**BUFFALO**—The scrap market has gone to pot from the dealer's point of view. One leading processor reports receipts from industrial sources off about 50 pct from a week ago, with many fabricating plants in the area at their wits' ends to find steel. Rail lists are running about 1/3 of normal, with consumers and dealers bidding keenly on the limited offerings. The trade is hot with gossip about the possibility of lifting OPA controls on scrap about Nov. 1 and dealers are inclined to sit tight and await developments. The steel mill blast furnace reported out of service is expected to be ready for operation at the end of the week, ending the necessity for shipping in pig iron. A 5000-ton Lake cargo of scrap is scheduled to arrive from Duluth about the end of the month.

**CLEVELAND**—Scrap shipments are about 60 pct of normal, or about the same levels as last week. Mills are continuing to buy scrap under "allocations" which CPA is renewing on application, but more slowly than during the initial period. According to reports, there is considerable over-grading, but the demand is such that no questions are being asked. Youngstown is still the tight spot in this area. Yardmen report they have been unable to touch WAA offerings because of the prices, but feel if OPA allowed a price increase, it would bring out some of the remote scrap.

**CINCINNATI**—The district iron and steel scrap market continues to be very tight. Users are appealing for all types of scrap, on the basis that shipments are necessary to avoid shut-downs, while dealers and brokers are moving material in almost hand-to-mouth proportions in an effort to keep users in operation. Reports indicate that one large melter in the area was able to stay in production by emergency diversion of tonnage.

**BIRMINGHAM**—Consumers here are fearful that material will be held back in increasing amounts on the assumption that scrap decontrol will follow that of meat. Some relief for users of steel grades may result, however, from the breaking up at Gulf ports of ships sold by the Maritime Commission. That program is getting under way.

**TORONTO**—The scrap iron and steel supply situation in Canada continues acute and dealers state that receipts are declining. Better grades of steelmaking scrap have almost entirely disappeared from the market and most offerings are in light baling materials. No accumulations of cast scrap are reported. Price ceilings continue in Canada and scrap imported from the United States is at a much higher cost to consumers than domestic scrap.

# IRON AND STEEL SCRAP PRICES

## PITTSBURGH

Per gross ton delivered to consumer:  
Cast grade f.o.b. shipping point

No. 1 hvy. melting	\$20.00*
RR. hvy. melting	21.00*
No. 2 hvy. melting	20.00*
RR. scrap rails	21.50*
Rails 3 ft. and under	23.50*
No. 1 comp'd sheets	20.00*
Hand bld. new shts.	20.00*
Hvy. axle turn.	19.50*
Hvy. steel forge turn.	19.50*
Mach. shop turn.	15.00*
Short shov. turn.	17.00*
Mixed bor. and turn.	15.00*
Cast iron borings	16.00*
No. 1 cupola cast.	25.00*
Charging box cast.	21.00*
Heavy breakable cast.	20.00*
Burnt cast.	17.75*
Malleable	24.00*
RR. knuck. and coup.	24.50*
RR. coil springs	24.50*
Rail leaf springs	24.50*
Roll steel wheels	24.50*
Low phos.	22.50*

## CHICAGO

Per gross ton delivered to consumer:  
Cast grades f.o.b. shipping point

No. 1 hvy. melting	\$18.75*
No. 2 hvy. melting	18.75*
No. 1 bundles	18.75*
No. 2 dealers' bndls.	18.75*
Bundled mach. shop turn.	18.75*
Galv. bundles	16.75*
Mach. shop turn.	13.75*
Short shovels, turn.	15.75*
Cast iron borings	14.75*
Mix. borings & turn.	13.75*
Low phos. hvy. forge.	23.75*
Low phos. plates	21.25*
No. 1 RR. hvy. melt.	19.75*
Reroll rails	22.25*
Miscellaneous rails	20.25*
Angles & splice bars	22.25*
Locomotive tires, cut	24.25*
Cut bolsters & side frames	22.25*
Standard stl. car axles	25.75*
No. 3 steel wheels	23.25*
Couplers & knuckles	23.25*
Malleable	24.00*
No. 1 mach. cast.	20.00*
Rails 3 ft. and under	22.25*
No. 1 agricul. cast.	20.00*
Hvy. breakable cast.	20.00*
RR. grate bars	15.25*
Cast iron brake shoes	17.75*
Stove plate	23.00*
Clean auto cast.	27.00*
Cast iron carwheels	22.00*

## CINCINNATI

Per gross ton delivered to consumer:  
Cast grades f.o.b. shipping point

No. 1 hvy. melting	\$19.50*
No. 2 hvy. melting	19.50*
No. 1 bundles	19.50*
No. 2 bundles	19.50*
Mach. shop turn.	\$10.50 to 11.00
Shoveling turn.	12.50 to 13.00
Cast iron borings	11.50 to 12.00
Mixed bor. & turn.	11.50 to 12.00
Low phos. plate	22.00*
No. 1 cupola cast.	25.00*
Hvy. breakable cast.	20.00*
Stove plate	23.00*
Scrap rails	21.00*

## BOSTON

Dealers' buying prices per gross ton,  
f.o.b. cars

No. 1 hvy. melting	\$15.05*
No. 2 hvy. melting	15.05*
Nos. 1 and 2 bundles	15.05*
Busheling	15.05*
Turnings, shoveling	12.05*
Machine shop turn.	10.05*
Mixed bor. & turn.	10.05*
Cl'n cast, chem. bor.	\$13.06 to 14.15*
No. 1 machinery cast.	25.00*
No. 2 machinery cast.	21.00*
Breakable cast.	20.00*
Stove plate	23.00*

## DETROIT

Per gross ton, brokers' buying prices:

No. 1 hvy. melting	\$17.32*
No. 2 hvy. melting	17.32*
No. 1 bundles	17.32*
New busheling	17.32*
Flashings	17.32*
Mach. shop turn.	12.32*
Short shov. turn.	14.32*

Going prices as obtained in the trade  
by IRON AGE editors, based on rep-  
resentative tonnages. Where asterisks  
are used they indicate the OPA  
ceiling price to which must be added  
brokerage fee and adjusted freight.

Cast iron borings	13.32*
Mixed bor. & turn.	12.32*
Low phos. plate	19.82*
No. 1 cupola cast.	25.00*
Charging box cast.	21.00*
Hvy. breakable cast.	20.00*
Stove plate	23.00*
Automotive cast.	27.00*

## PHILADELPHIA

Per gross ton delivered to consumer:  
Cast grades f.o.b. shipping point

No. 1 hvy. melting	\$18.75*
No. 2 hvy. melting	18.75*
No. 2 bundles	18.75*
Mach. shop turn.	13.75*
Shoveling turn.	15.75*
Cast iron borings	14.75*
Mixed bor. & turn.	13.75*
No. 1 cupola cast.	25.00*
Hvy. breakable cast.	20.00*
Clean auto cast.	27.00*
Hvy. axle forge turn.	18.25*
Low phos. plate	21.25*
Low phos. punchings	21.25*
RR. steel wheels	23.25*
RR. coil springs	23.25*
RR. malleable	22.00*

## ST. LOUIS

Per gross ton delivered to consumer:  
Cast grades f.o.b. shipping point

Heavy melting	\$17.50*
Bundled sheets	17.50*
Mach. shop turn.	12.50*
Locomotive tires, uncut	21.00*
Misc. std. sec. rails	19.00*
Rerolling rails	21.00*
Steel angle bars	21.00*
Rails 3 ft. and under	21.50*
RR. springs	22.00*
Steel car axles	24.50*
Stove plate	23.00*
Grate bars	15.25*
Brake shoes	17.75*
Malleable	24.00*
Cast iron carwheels	22.00*
No. 1 mach'ery cast.	22.00*
Breakable cast.	20.00*

## BIRMINGHAM

Per gross ton delivered to consumer:  
Cast grades f.o.b. shipping point

No. 1 hvy. melting	\$17.00*
No. 2 hvy. melting	17.00*
No. 2 bundles	17.00*
No. 1 busheling	17.00*
Long turnings	12.00*
Shoveling turnings	14.00*
Cast iron borings	13.00*
Bar crops and plate	\$18.50 to 19.50*
Structural and plate	18.50 to 19.50*
No. 1 cast.	25.00*
Stove plate	23.00*
Steel axles	18.50*
Scrap rails	18.50*
Rerolling rails	20.50*
Angles & splice bars	20.50 to 21.00*
Rails 3 ft. & under	21.00*
Cast iron carwheels	22.00*

## YOUNGSTOWN

Per gross ton delivered to consumer:  
Cast grades f.o.b. shipping point

No. 1 hvy. melting	\$20.00*
No. 2 hvy. melting	20.00*
Low phos. plate	22.50*
No. 1 busheling	20.00*
Hydraulic bundles	20.00*
Mach. shop turn.	15.00*
Short shov. turn.	17.00*
Cast iron borings	16.00*

## NEW YORK

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	\$15.33*
No. 2 hvy. melting	15.33*
Comp. black bundles	15.33*
Comp. galv. bundles	13.33*
Mach. shop turn.	10.33*
Mixed bor. & turn.	10.33*
Shoveling turn.	12.33*
No. 1 cupola cast.	25.00*

Hvy. breakable cast.	20.00*
Charging box cast.	21.00*
Stove plate	23.00*
Clean auto cast.	27.00*
Unstrip. motor blks.	20.00*
Cl'n chem. cast bor.	14.33*

## BUFFALO

Per gross ton delivered to consumer:  
Cast grades f.o.b. shipping point

No. 1 hvy. melting	\$19.25*
No. 1 bundles	19.25*
No. 2 bundles	19.25*
No. 2 hvy. melting	19.25*
Mach. shop turn.	14.25*
Shoveling turn.	16.25*
Cast iron borings	15.25*
Mixed bor. & turn.	14.25*
No. 1 cupola cast.	25.00*
Charging box cast.	21.00*
Stove plate	23.00*
Clean auto cast.	27.00*
Malleable	24.00*
Low phos. plate	21.75*
Scrap rails	20.75*
Rails 3 ft. & under	22.75*
RR. steel wheels	23.75*
Cast iron carwheels	22.00*
RR. coll & leaf spgs.	23.75*
RR. knuckles & coup.	23.75*
No. 1 busheling	19.25*

## CLEVELAND

Per gross ton delivered to consumer:  
Cast grades f.o.b. shipping point

No. 1 hvy. melting	\$19.50*
No. 2 hvy. melting	19.50*
Compressed sheet stl.	19.50*
Drop forge flashings	19.00*
No. 2 bundles	19.50*
Mach. shop turn.	14.50*
Short shovel.	16.50*
No. 1 busheling	19.50*
Steel axle turn.	19.00*
Cast iron borings	15.50*
Mixed bor. & turn.	14.50*
No. 2 busheling	17.00*
No. 1 machinery cast.	25.00*
Malleable	24.00*
Railroad cast	20.00*
Railroad grate bars	15.25*
Stove plate	23.00*
RR. hvy. melting	20.50*
Rails 3 ft. & under	23.00*
Rails 18 in. & under	24.25*
Rails for rerolling	23.00*
Elec. furnace punch	22.00*

## SAN FRANCISCO

Per gross ton delivered to consumer:  
Cast grade f.o.b. shipping point

RR. hvy. melting	\$18.00*
No. 1 hvy. melting	17.00*
No. 2 hvy. melting	17.00*
No. 2 bales	17.00*
No. 3 bales	15.00*
Mach. shop turn.	12.00*
Elec. furn. 1 ft. und.	19.50*
No. 1 cupola cast.	25.00*

## LOS ANGELES

Per gross ton delivered to consumer:  
Cast grade f.o.b. shipping point

No. 1 hvy. melting	\$17.00
No. 2 hvy. melting	17.00
No. 1 bales	17.00
No. 2 bales	17.00
No. 3 bales	15.00
Mach. shop turn.	12.00
No. 1 cupola cast.	25.00

## SEATTLE

Per gross ton delivered to consumer:  
Cast grade f.o.b. shipping point

No. 1 & No. 2 hvy. melting	\$14.50*
Elec. furn. 1 ft. und.	17.00
No. 1 cupola cast.	25.00*
RR. hvy. melting	14.50*

## HAMILTON, ONT.

Per gross ton delivered to consumer:  
Cast grades f.o.b. shipping point

Heavy melting	\$17.50*
No. 1 bundles	17.50*
No. 2 bundles	17.00*
Mixed steel scrap	15.50*
Rails, remelting	18.50*
Rails, rerolling	21.50*
Bushelings	13.00*
Mixed borings & turnings	12.50*
Electric furnace bundles	20.50*
Manganese steel scrap	20.00*
No. 1 cast	19.00*
Stove plate	17.50*
Car wheels, cast	19.50*
Malleable iron	16.00*



# Comparison of Prices . .

Advances over past week in Heavy Type, declines in Italics. Prices are f.o.b. major basing points. The various basing points for finished and semifinished steel are listed in the detailed price tables.

Flat-Rolled Steel:	Oct. 22, 1946	Oct. 15, 1946	Sept. 17, 1946	Oct. 23, 1945
(cents per pound)	1946	1946	1946	1945
Hot-rolled sheets	2.425	2.425	2.425	2.20
Cold-rolled sheets	3.275	3.275	3.275	3.05
Galvanized sheets (24 ga.)	4.05	4.05	4.05	3.70
Hot-rolled strip				
6-in and under	2.45	2.45	2.45	2.10
Over 6 in.	2.35	2.35	2.35	2.10
Cold-rolled strip	3.05	3.05	3.05	2.80
Plates	2.50	2.50	2.50	2.25
Plates, wrought iron	4.112	4.112	4.112	3.80
Stain's c-r strip (No. 302)	30.30	30.30	30.30	28.00

Tin and Ternplate:	Oct. 22, 1946	Oct. 15, 1946	Sept. 17, 1946	Oct. 23, 1945
(dollars per base box)				
Tinplate, standard cokes..	\$5.00	\$5.00	\$5.00	\$5.00
Tinplate, electro (0.50 lb)	4.50	4.50	4.50	4.50
Special coated mfg. ternes	4.30	4.30	4.30	4.30

Bars and Shapes:	Oct. 22, 1946	Oct. 15, 1946	Sept. 17, 1946	Oct. 23, 1945
(cents per pound)				
Merchant bars	2.50	2.50	2.50	2.25
Cold-finished bars	3.10	3.10	3.10	2.75
Alloy bars	2.92	2.92	2.92	2.70
Structural shapes	2.35	2.35	2.35	2.10
Stainless bars (No. 302)	25.97	25.97	25.97	24.00
Wrought iron bars	4.76	4.76	4.76	4.40

Wire and Wire Products:	Oct. 22, 1946	Oct. 15, 1946	Sept. 17, 1946	Oct. 23, 1945
(cents per pound)				
Bright wire	3.05	3.05	3.05	2.75
Wire nails	3.75	3.75	3.75	2.90

Rails:	Oct. 22, 1946	Oct. 15, 1946	Sept. 17, 1946	Oct. 23, 1945
(dollars per net ton)				
Heavy rails	\$43.39	\$43.39	\$43.39	\$43.00*
Light rails	49.18	49.18	49.18	45.00*
*per gross ton				

Semifinished Steel:	Oct. 22, 1946	Oct. 15, 1946	Sept. 17, 1946	Oct. 23, 1945
(dollars per gross ton)				
Rerolling billets	\$39.00	\$39.00	\$39.00	\$36.00
Sheet bars	38.00	38.00	38.00	36.00
Slabs, rerolling	39.00	39.00	39.00	36.00
Forging billets	47.00	47.00	47.00	42.00
Alloy blooms, billets, slabs	58.43	58.43	58.43	54.00

Wire Rods and Skelp:	Oct. 22, 1946	Oct. 15, 1946	Sept. 17, 1946	Oct. 23, 1945
(cents per pound)				
Wire rods	2.30	2.30	2.30	2.15
Skelp	2.05	2.05	2.05	1.90

Pig Iron*:	Oct. 22, 1946	Oct. 15, 1946	Sept. 17, 1946	Oct. 23, 1945
(per gross ton)				
No. 2 foundry, Phila....	\$30.43	\$30.43	\$30.43	\$27.59
No. 2, Valley furnace....	28.50	28.50	28.50	25.75
No. 2, Southern, Cin'ti...	27.80	27.80	27.80	26.19
No. 2, Birmingham .....	24.88	24.88	24.88	22.13
No. 2 foundry, Chicago†.	28.50	28.50	28.50	25.75
Basic, del'd eastern Pa...	29.93	29.93	29.93	27.09
Basic, Valley furnace....	28.00	28.00	28.00	25.25
Malleable, Chicago† .....	28.50	28.50	28.50	25.75
Malleable Valley .....	28.50	28.50	28.50	25.75
L. S. charcoal, Chicago..	42.34	42.34	42.34	42.34
Ferromanganese‡ .....	135.00	135.00	135.00	135.00

† The switching charge for delivery to foundries in the Chicago district is 60¢ per ton.  
‡ For carlots at seaboard.

\* Prices retroactive to May 29; the price increase should be reflected in THE IRON AGE Comparison of Prices table since June 4.

Scrap:	Oct. 22, 1946	Oct. 15, 1946	Sept. 17, 1946	Oct. 23, 1945
(per gross ton)				
Heavy melt'g steel, P'gh.	\$20.00	\$20.00	\$20.00	\$20.00
Heavy melt'g steel, Phila.	18.75	18.75	18.75	18.75
Heavy melt'g steel, Ch'go	18.75	18.75	18.75	18.75
No. 1 hy. comp. sheet, Det.	17.32	17.32	17.32	17.32
Low phos. plate, Youngs'n	22.50	22.50	22.50	22.50
No. 1 cast, Pittsburgh...	25.00	25.00	25.00	25.00
No. 1 cast, Philadelphia..	25.00	25.00	25.00	25.00
No. 1 cast, Chicago.....	25.00	25.00	25.00	25.00

Coke, Connellsville:	Oct. 22, 1946	Oct. 15, 1946	Sept. 17, 1946	Oct. 23, 1945
(per net ton at oven)				
Furnace coke, prompt....	\$8.75	\$8.75	\$8.75	\$7.50
Foundry coke, prompt...	8.50	8.50	8.50	9.00

Nonferrous Metals:	Oct. 22, 1946	Oct. 15, 1946	Sept. 17, 1946	Oct. 23, 1945
(cents per pound to large buyers)				
Copper, electro., Conn....	14.375	14.375	14.375	12.00
Copper, Lake, Conn.....	14.375	14.375	14.375	12.00
Tin, Straits, New York...	52.00	52.00	52.00	52.00
Zinc, East St. Louis.....	9.25	9.25	8.25	8.25
Lead, St. Louis .....	8.10	8.10	8.10	6.35
Aluminum, virgin .....	15.00	15.00	15.00	15.00
Nickel, electrolytic .....	35.00	35.00	35.00	35.00
Magnesium, ingot .....	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex...	14.50	14.50	14.50	14.50

Starting with the issue of Apr. 22, 1943, the weighted finished steel index was revised for the years 1941, 1942 and 1943. See explanation of the change on p. 90 of the Apr. 22, 1943, issue. Index revised to a quarterly basis as of Nov. 16, 1944; for details see p. 98 of that issue. The finished steel composite prices for the current quarter are an estimate based on finished steel shipments for the previous quarter. These figures will be revised when the actual data of shipments for this quarter are compiled.

# Composite Prices . .

## FINISHED STEEL

Oct. 22, 1946	2.73011¢ per lb.
One week ago	2.73011¢ per lb.
One month ago	2.73011¢ per lb.
One year ago	2.44104¢ per lb.

HIGH	LOW
1946.... 2.73011¢ July 4	2.54490¢ Jan. 1
1945.... 2.44104¢ Oct. 2	2.38444¢ Jan. 2
1944.... 2.30837¢ Sept. 5	2.21189¢ Oct. 5
1943.... 2.29176¢	2.29176¢
1942.... 2.28249¢	2.28249¢
1941.... 2.43078¢	2.43078¢
1940.... 2.30467¢ Jan. 2	2.24107¢ Apr. 16
1939.... 2.35367¢ Jan. 3	2.26689¢ May 16
1938.... 2.58414¢ Jan. 4	2.27207¢ Oct. 18
1937.... 2.58414¢ Mar. 9	2.32263¢ Jan. 4
1936.... 2.32263¢ Dec. 28	2.05200¢ Mar. 10
1935.... 2.07642¢ Oct. 1	2.06492¢ Jan. 8
1934.... 2.15367¢ Apr. 24	1.95757¢ Jan. 2
1933.... 1.95578¢ Oct. 3	1.75836¢ May 2
1932.... 1.89196¢ July 5	1.83901¢ Mar. 1
1931.... 1.99626¢ Jan. 13	1.86586¢ Dec. 29
1930.... 2.25488¢ Jan. 7	1.97319¢ Dec. 9
1929.... 2.31773¢ May 28	2.26498¢ Oct. 29

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing 78 pct of the United States output. Index recapitulated in Aug. 28, 1941, issue.

## PIG IRON

.....\$28.13 per gross ton....
.....\$28.13 per gross ton....
.....\$28.13 per gross ton....
.....\$25.37 per gross ton....

HIGH	LOW
\$28.13 May 29	\$25.37 Jan. 1
25.37 Oct. 23	23.61 Jan. 2
\$23.61	\$23.61
23.61	23.61
23.61	23.61
\$23.61 Mar. 20	\$23.45 Jan. 2
23.45 Dec. 23	22.61 Jan. 2
22.61 Sept. 19	20.61 Sept. 12
23.25 June 21	19.61 July 6
23.25 Mar. 9	20.25 Feb. 16
19.74 Nov. 24	18.73 Aug. 11
18.84 Nov. 5	17.83 May 14
17.90 May 1	16.90 Jan. 27
16.90 Dec. 5	13.56 Jan. 3
14.81 Jan. 5	13.56 Dec. 6
15.90 Jan. 6	14.79 Dec. 15
18.21 Jan. 7	15.90 Dec. 16
18.71 May 14	18.21 Dec. 17

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

## SCRAP STEEL

.....\$19.17 per gross ton....
.....\$19.17 per gross ton....
.....\$19.17 per gross ton....
.....\$19.17 per gross ton....

HIGH	LOW
\$19.17	\$19.17
\$19.17 Jan. 2	\$18.92 May 22
19.17 Jan. 11	15.76 Oct. 24
\$19.17	\$19.17
19.17	19.17
\$22.00 Jan. 7	\$19.17 Apr. 10
21.83 Dec. 30	16.04 Apr. 9
22.50 Oct. 3	14.08 May 16
15.00 Nov. 22	11.00 June 7
21.92 Mar. 30	12.67 June 9
17.75 Dec. 21	12.67 June 8
13.42 Dec. 10	10.33 Apr. 29
13.00 Mar. 13	9.50 Sept. 25
12.25 Aug. 8	6.75 Jan. 3
8.50 Jan. 12	6.43 July 5
11.33 Jan. 6	8.50 Dec. 29
15.00 Feb. 18	11.25 Dec. 9
17.58 Jan. 29	14.08 Dec. 3

Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia, and Chicago.

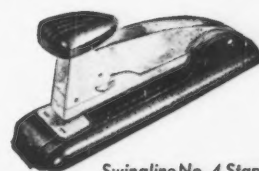
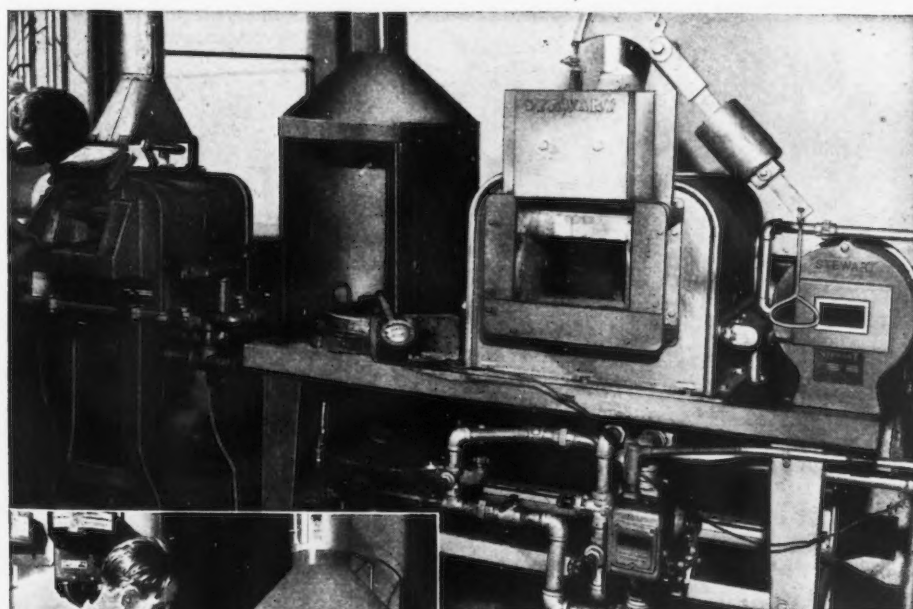
No. 68  
of a  
Series  
of Typical  
Installations

# Sunbeam STEWART

THE BEST INDUSTRIAL FURNACES MADE

**For GENERAL HEAT TREATING of PRECISION  
TOOLS, DIES and EXPERIMENTAL PARTS**

**at SPEED PRODUCTS COMPANY, INC., LONG ISLAND CITY, NEW YORK**



Swingline No. 4 Stapler,  
best known of the office supply items  
manufactured by Speed Products Co.

Left: Sunbeam Stewart Combination Triple Purpose Furnace used by Speed Products for complete heat treating. This popular Sunbeam Stewart Furnace provides the following basic operations: (1) Oven furnace hardening; (2) Lead, salt or cyanide hardening; (3) Lead, salt or oil tempering; (4) Forging, welding, tool dressing; (5) Annealing, normalizing, pack carburizing; (6) Non-ferrous metal melting.

At the left of the Triple Purpose Furnace, a Sunbeam Stewart Semi-muffle Furnace is being loaded with a precision die. Speed Products find this installation desirable for intermittent work because of its flexibilities and quick heating qualities.

Bottom left: A Sunbeam Stewart Round Pot Tempering Furnace being loaded with punch press dies. This furnace is built in two series, one for oil tempering (max. temp. 600° F.) with burners firing underneath the pot refractory protecting block; the other for salt, lead or similar heating mediums (max. temp. 1250° F.) with burners placed at the top to prevent excessive external expansion of solidified heating medium.

Prior to 1942, Speed Products Company, makers of the famous Swingline stapler, had only limited heat treating facilities. Recognizing the key importance of heat treating, they purchased the necessary Sunbeam Stewart Hardening and Tempering Furnaces to handle all the various types of steels in use. Longer life and increased production from their own tools and dies resulted from the establishment of a Heat Treat Department.

This installation is typical of the standard industrial heat-treating furnaces Sunbeam Stewart builds every day to meet the requirements of manufacturers all over the country. Sunbeam Stewart engineers will be glad to work with you on your heat treat requirements.

## FREE ON REQUEST VEST POCKET HEAT TREATING DATA BOOK

Seventy-two pages of charts, tables, diagrams, factual data . . . ready reference book for all types of engineers. Write Sunbeam Stewart, Dept. 110, for your personal copy.

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Main Office: 4433 Ogden Ave., Chicago 23, Ill. — Canada Factory: 321 Weston Rd., So., Toronto 9

A letter, wire or 'phone call will promptly bring you information and details on SUNBEAM STEWART furnaces, either units for which plans are now ready or units especially designed to meet your needs. Or, if you prefer, a SUNBEAM STEWART engineer will be glad to call and discuss your heat treating problems with you.



## — Iron and Steel Prices . . .

Steel prices shown here are f.o.b. basing points, in cents per pound or dollars per gross ton. Extras apply. Delivered prices do not reflect 8 pct tax on freight. (1) Mill run sheet, 10¢ per 100 lb under base; primes, 25¢ above base. (2) Unassorted commercial coating. (3) Widths up to 12-in. inclusive. (4) 0.25 carbon and less. (5) Applies to certain width and length limitations. (6) For merchant trade. (7) For straight length material only from producer to consumer. Discount of 25¢ per 100 lb to fabricators. (8) Also shafting. For quantities of 20,000 lb to 39,999 lb. (9) Carload lot in manufacturing trade. (10) Prices do not apply if rail and water is not used. (11) Boxed. (12) This base price for annealed, bright finish wires, commercial spring wire. (13) Produced to dimensional tolerances in AISI Manual Sect. 6. (14) Billets only. (15) 9/32 in. to 47/64 in., 0.15¢ per lb higher.

Basing Points	Pitts- burgh	Chicago	Gary	Cleve- land	Birm- ingham	Buffalo	Youngs- town	Spar- rows Point	Granite City	Middle- town, Ohio	Gulf Ports, Cars	10 Pacific Ports, Cars	DELIVERED TO			
													Detroit	New York	Phila- delphia	
INGOTS																
Carbon, re-rolling																
	(\$33.90 f. o. b. mill)															
Carbon, forging	\$38	\$38	\$38	\$38	\$38	\$38	\$38									
Alloy . . . . .	\$48.69	\$48.69				\$48.69	(Bethlehem, Massillon, Canton, Coatesville=\$48.69)									
BILLETS, BLOOMS, SLABS																
Carbon, re-rolling	\$39	\$39	\$39	\$39	\$39	(Provo=\$50.20, Duluth=\$41 <sup>14</sup> ) \$39	\$39	\$39				\$51.50 <sup>14</sup>	\$41.50			
Carbon, forging billets . . . . .	\$47	\$47	\$47	\$47	\$47	(Provo=\$58.20, Duluth=\$49 <sup>14</sup> ) \$47	\$47					\$59.50 <sup>14</sup>	\$49.50			
Alloy	\$58.43	\$58.43				\$58.43	(Bethlehem, Massillon, Canton=\$58.43)						\$60.93			
SHEET BARS	\$38	\$38		\$38		\$38	\$38	\$38	(Canton=\$38)							
PIPE SKELP	2.05¢	2.05¢					2.05¢	2.05¢	(Coatesville=2.05¢)							
WIRE RODS <sup>15</sup> No. 5 to 9/32 In.	2.30¢	2.30¢		2.30¢	2.30¢		(Worcester=2.40¢)					2.585¢	2.835¢			
SHEETS																
Hot-rolled	2.425¢	2.425¢	2.425¢	2.425¢	2.425¢	2.425¢	2.425¢	2.425¢	2.875¢	2.425¢		3.01¢	2.56¢	2.685¢	2.615¢	
Cold-rolled <sup>1</sup>	3.275¢	3.275¢	3.275¢	3.275¢		3.275¢	3.275¢		3.375¢	3.275¢		3.96¢	3.41¢	3.635¢	3.635¢	
Galvanized (24 gage)	4.05¢	4.05¢	4.05¢		4.05¢	4.05¢	4.05¢	4.05¢	4.50¢	4.05¢		4.635¢		4.31¢	4.24¢	
Enameling (20 gage)	3.80¢	3.80¢	3.80¢	3.80¢			3.80¢		3.90¢	3.80¢		4.485¢	3.935¢	4.20¢	4.16¢	
Enameling (10 Gage)	3.20¢	3.20¢	3.20¢	3.20¢			3.20¢		3.30¢	3.20¢		3.885¢	3.335¢	3.60¢	3.56¢	
Long ternes <sup>2</sup>	4.05¢	4.05¢	4.05¢									4.835¢		4.45¢	4.41¢	
STRIP																
Hot-rolled 3/16 In. and under (over 6 in.	2.45¢ 2.35¢	2.45¢ 2.35¢	2.45¢ 2.35¢	2.45¢ 2.35¢	2.45¢ 2.35¢		2.45¢ 2.35¢			2.45¢ 2.35¢		3.135¢ 3.035¢	2.585¢ 2.485¢	2.85¢ 2.75¢	2.81¢ 2.71¢	
Cold-rolled <sup>4</sup>	3.05¢	3.15¢		3.05¢			3.05¢	(Worcester=3.25¢)					3.185¢	3.45¢	3.41¢	
Cooperage stock	2.55¢	2.55¢			2.55¢		2.55¢							2.95¢		
TINPLATE																
Standard cokes, base box	\$5.00	\$5.00	\$5.00		\$5.10				\$5.10	\$5.10				\$5.375	\$5.301	
Electro, box (0.25 lb 0.50 lb 0.75 lb)	\$4.35 \$4.50 \$4.65	\$4.35 \$4.50 \$4.65	\$4.35 \$4.50 \$4.65						\$4.35 \$4.60 \$4.75	\$4.60 \$4.75						
BLACKPLATE 29 gage <sup>5</sup>	3.30¢	3.30¢	3.30¢						3.40¢	3.40¢				3.67¢	3.59¢	
TERNES, MFG. Special coated, base box	\$4.30	\$4.30	\$4.30						\$4.40	\$4.40						
BARS																
Carbon steel	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢		(Duluth=2.60¢) (Provo, Utah=3.20¢)			2.885¢	3.185¢	2.635¢	2.84¢	
Rail steel <sup>6</sup>	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢						2.885¢	3.185¢			
Reinforcing (billet) <sup>7</sup>	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢				2.735¢	2.785¢	2.485¢	2.61¢	
Reinforcing (rail) <sup>7</sup>	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢					2.735¢	2.785¢	2.485¢	2.69¢	
Cold-finished <sup>8</sup>	3.10¢	3.10¢	3.10¢	3.10¢		3.10¢		(Detroit=3.15¢) (Toledo=3.25¢)					3.44¢	3.46¢		
Alloy, hot-rolled	2.92¢	2.92¢				2.92¢	2.92¢	(Bethlehem, Massillon, Canton=2.92¢)					3.055¢			
Alloy, cold-drawn	3.62¢	3.62¢	3.62¢	3.62¢		3.62¢							3.765¢			
PLATE																
Carbon steel <sup>13</sup>	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢		2.50¢	(Coatesville, Claymont=2.50¢+Geneva, Utah=2.65¢) 2.50¢					2.885¢	3.085¢	2.755¢	
Floor plates	3.75¢	3.75¢										4.135¢	4.435¢		4.15¢	
Alloy	3.79¢	3.79¢				(Coatesville=3.79¢)						4.305¢	4.525¢		4.01¢	
SHAPES																
Structural	2.35¢	2.35¢	2.35¢		2.35¢	2.35¢	(Bethlehem=2.35¢)					2.735¢	3.035¢		2.54¢	
SPRING STEEL, C-R																
0.26 to 0.50 carbon	3.05¢			3.05¢			(Worcester=3.25¢)									
0.51 to 0.75 carbon	4.65¢			4.65¢			(Worcester=4.85¢)									
0.76 to 1.00 carbon	6.65¢			6.65¢			(Worcester=6.85¢)									
1.01 to 1.25 carbon	9.03¢			9.03¢			(Worcester=9.23¢)									
WIRE <sup>9</sup>																
Bright <sup>12</sup>	3.05¢	3.05¢		3.05¢	3.05¢		(Worcester=3.15¢) (Duluth=3.10¢)					3.585¢		3.44¢	3.41¢	
Galvanized						Add proper size extra and galvanizing extra to Bright Wire Base										
Spring (high carbon)	4.00¢	4.00¢		4.00¢			(Worcester=4.10¢) (Trenton=4.25¢)					4.535¢		4.39¢	4.339¢	
PILING																
Steel sheet	2.65¢	2.65¢				2.65¢						3.235¢		2.99¢	3.01¢	

# PRICES

## CORROSION AND HEAT RESISTANT STEELS

In cents per pound, f.o.b. basing point

### BASING POINT

	Chromium Nickel		Straight Chromium			
	No. 304	No. 302	No. 410	No. 430	No. 442	No. 446
Ingot, P'gh, Chi, Canton, Balt, Reading, Ft. Wayne, Phila.	Subject to negotiation		Subject to negotiation			
Blooms, P'gh, Chi, Canton, Phila, Reading, Ft. Wayne, Balt.	22.99	24.67	17.01	17.47	20.69	25.29
Slabs, P'gh, Chi, Canton, Balt, Phila, Reading	22.99	24.67	17.01	17.47	20.69	25.29
Billets P'gh, Chi, Canton, Watervliet, Syracuse, Balt.	Subject to negotiation		Subject to negotiation			
Billets, forging, P'gh, Chi, Canton, Dunkirk, Balt, Phila, Reading, Watervliet, Syracuse, Ft. Wayne, Titusville.	22.99	24.67	17.01	17.47	20.69	25.29
Bars, h-r, P'gh, Chi, Canton, Dunkirk, Watervliet, Syracuse, Balt, Phila, Reading, Ft. Wayne, Titusville.	27.05	25.97	20.02	20.56	24.34	29.75
Bars, c-f, P'gh, Chi, Cleve, Canton, Dunkirk, Syracuse, Balt, Phila, Reading, Ft. Wayne, Watervliet.	27.05	25.97	20.02	20.56	24.34	29.75
Plates, P'gh, Middletown, Canton.	31.39	29.21	23.28	23.80	28.67	33.00
Shapes, structural, P'gh, Chi.	27.05	25.97	20.02	20.56	24.34	29.75
Sheets, P'gh, Chi, Middletown, Canton, Balt.	38.95	36.79	28.67	31.38	35.16	38.49
Strip, h-r, P'gh, Chi, Reading, Canton, Youngstown.	25.43	23.28	18.39	18.93	25.97	37.87
Strip, c-f, P'gh, Cleve, Newark, N. J., Reading, Canton, Youngstown.	32.46	30.30	23.80	24.34	34.62	56.28
Wire, c-d, Cleve, Dunkirk, Syracuse, Balt, Reading, Canton, P'gh, Newark, N. J., Phila.	27.05	25.97	20.02	20.56	24.34	29.75
Wire, flat, c-r, Cleve, Balt, Reading, Dunkirk, Canton.	32.46	30.30	23.80	24.34	34.62	56.28
Rod, h-r, Syracuse.	27.05	25.97	20.02	20.56	24.34	29.75
Tubing, seamless, P'gh, Chi, Canton, (4 in. to 6 in.).	72.09	72.09	.....	68.49	.....	.....

### TOOL STEEL

(F.o.b. Pittsburgh, Bethlehem, Syracuse, Dunkirk. \*Also Canton, O.)

An increase of 8.2 pct applies to base price and extras

Base per lb

High speed	67¢
Straight molybdenum	54¢
Tungsten-molybdenum	57 1/4¢
High-carbon-chromium*	43¢
Oil hardening*	24¢
Special carbon*	22¢
Extra carbon*	18¢
Regular carbon*	14¢

Warehouse prices on and east of Mississippi are 2¢ per lb higher; west of Mississippi 3¢ higher.

### ELECTRICAL SHEETS

Base, all grades f.o.b. Pittsburgh

per lb

Field grade	3.90¢
Armature	4.25¢
Electrical	4.75¢
Motor	5.425¢
Dynamo	6.125¢
Transformer 72	6.625¢
Transformer 65	7.625¢
Transformer 58	8.125¢
Transformer 52	8.925¢

F.o.b. Chicago and Gary, field grade through motor; f.o.b. Granite City, add 10¢ per 100 lb on field grade to and including dynamo. Pacific ports add 75¢ per 100 lb on all grades.

### RAILS, TRACK SUPPLIES

(F.o.b. mill)

Standard rails, heavier than 60 lb	
No. 1 O.H., net ton	\$43.39
Angle splice bars, 100 lb	2.85
(F.o.b. basing points)	per net ton
Light rails (from billets)	\$44.18
Light rails (from rail steel)	49.18

base per lb

Cut spikes	3.65¢
Screw spikes	5.15¢
Tie plate, steel	2.55¢
Tie plates, Pacific Coast	2.70¢
Track bolts	6.50¢
Track bolts, heat treated, to railroads	6.75¢
Track bolts, jobbers discount	63-5
*Plus 12 pct.	

Basing points, light rails, Pittsburgh, Chicago, Birmingham; cut spikes and tie plates—Pittsburgh, Chicago, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minnequa, Colo., Birmingham and Pacific Coast ports; tie plates alone—Steelton, Pa., Buffalo, Cut spikes alone—Youngstown, Lebanon, Pa., Richmond, Oregon and Washington ports, add 25¢.

### ROOFING TERNEPLATE

(F.o.b. Pittsburgh, 112 sheets)

8-lb coating I.C.	\$8.50	\$17.00
15-lb coating I.C.	9.50	19.00
20-lb coating I.C.	10.00	20.00

### CLAD STEEL

Base prices, cents per pound

Plate Sheet

Stainless-clad	
No. 304, 20 pct, f.o.b. Pittsburgh, Washington, Pa.	21.00* 22.00
Nickel-clad	
10 pct, f.o.b. Coatesville, Pa.	18.72
Inconel-clad	
10 pct, f.o.b. Coatesville	26.00
Monel-clad	
10 pct, f.o.b. Coatesville	24.96
Aluminized steel	
Hot dip, 20 gage, f.o.b. Pittsburgh	9.00

\*Includes annealing and pickling.

### WIRE PRODUCTS

To the dealer, f.o.b. Pittsburgh, Chicago, Cleveland, Birmingham, Duluth

	Basing Points	Pacific Coast Basing Pointst
Standard wire nails	\$3.75	\$4.25
Coated nails	3.75	4.25
Cut nails, carloads	4.85	.....
base per keg		
Annealed fence wire	\$3.50	\$4.00
Annealed galv. fence wire	3.85	4.35
base column		
Woven wire fence*	72	90
Fence posts, carloads	74	91
Single loop bale tie†	72	97
Galvanized barbed wire**	79	89
Twisted barbed wire	79	89

\*15 1/2 gage and heavier. \*\*On 80-rod spools in carload quantities.  
†Prices subject to switching or transportation charges.  
‡Add 50¢ a ton.

### HIGH TENSILE, LOW ALLOY STEELS

base prices, cents per pound

Steel	Aldecor	Corten	Double Strength No. 1	Dynalloy	Hi Steel	Mayari R	Otis-cloy	Yoloy	Y-50
Producer	Republic	Carnegie-Illinois, Republic	Republic	Alan Wood	Inland	Bethlehem	Jones & Laughlin	Youngstown Sheet & Tube	American Rolling Mill
Plates.....	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	.....
Sheets									
Hot-rolled....	3.575	3.575	3.575	3.575	3.575	3.575	3.575	3.575	.....
Cold-rolled....	4.525	4.525	4.525	.....	4.525	4.525	4.525	4.525	5.225*
Galvanized....	.....	.....	.....	.....	.....	5.50	.....	.....	.....
Strip									
Hot-rolled	*	*	*	*	*	*	*	*	*
Over 6-in....	3.60	3.60	3.60	.....	3.60	3.60	3.60	3.60	.....
6-in & under	3.70	3.70	3.70	.....	3.70	3.70	3.70	3.70	.....
Cold-rolled....	4.30	4.30	4.30	.....	4.40	.....	4.30	4.30	5.00*
Commodity....	.....	.....	.....	.....	.....	.....	4.45	.....	.....
Shapes.....	.....	3.45	.....	.....	3.45	3.45	3.45	3.45	.....
Beams.....	.....	3.45	.....	.....	.....	3.45	.....	.....	.....
Bars									
Hot-rolled....	3.70	3.70	3.70	.....	.....	3.70	3.70	3.732††	.....
Cold rolled....	.....	.....	.....	.....	.....	.....	.....	4.382††	.....
Bar sh pes....	.....	3.85	.....	.....	3.85	3.85	3.85	3.85	.....
Billets, blooms, slabs (per gross ton)	.....	.....	.....	.....	.....	.....	.....	.....	.....
Structural.....	.....	.....	.....	.....	.....	.....	.....	\$74.65†	.....
Forging.....	.....	.....	.....	.....	.....	.....	.....	\$82.23†	.....

\* 21 gage and lighter.

† Alloy extras apply.

‡ Add 0.379¢ for forging or heat treating grade.



## PRICES

### WELDED PIPE AND TUBING

Base discounts, f.o.b. Pittsburgh district and Lorain, Ohio, mills  
(F.o.b. Pittsburgh only on wrought pipe)  
Base price—\$200.00 per net ton

#### Steel (buttweld)

	Black	Galv.
1/4-in. ....	60 1/2	45
3/4-in. ....	63 1/2	52
1-in. to 3-in. ....	65 1/2	54 1/2

#### Wrought Iron (buttweld)

1/4-in. ....	17 7/8	+4 3/8
3/4-in. ....	24 1/4	2 5/8
1-in. and 1 1/4-in. ....	28 5/8	9 1/4
1 1/2-in. ....	33	11 7/8
2-in. ....	32 3/4	11 3/4

#### Steel (lapweld)

2-in. ....	58	46 1/2
2 1/2-in. and 3-in. ....	61	49 1/2
3 1/2-in. to 6-in. ....	63	51 1/2

#### Wrought Iron (lapweld)

2-in. ....	24 7/8	4 7/8
2 1/2-in. to 3 1/2-in. ....	25 7/8	7 1/2
4-in. ....	28 3/4	11 3/4
4 1/2-in. to 8-in. ....	27	10 1/4

#### Steel (butt, extra strong, plain ends)

1/4-in. ....	58 1/2	47 1/2
3/4-in. ....	62 1/2	51 1/2
1-in. to 3-in. ....	64	54

#### Wrought Iron (same as above)

1/4-in. ....	18 7/8	+1 5/8
3/4-in. ....	25 3/4	4 3/4
1-in. to 2-in. ....	33	13

#### Steel (lap, extra strong, plain ends)

2-in. ....	56	46 1/2
2 1/2-in. and 3-in. ....	60	49 1/2
3 1/2-in. to 6-in. ....	63 1/2	53

#### Wrought Iron (same as above)

2-in. ....	28 3/4	8 5/8
2 1/2-in. to 4-in. ....	34	16 1/4
4 1/2-in. to 6-in. ....	32 3/4	14 3/4

On buttweld and lapweld steel pipe jobbers are granted a discount of 5 pct. On l.c.l. shipments prices are determined by adding 25 pct and 30 pct and the carload freight rate to the base card.  
F.o.b. Gary prices are two points lower discount or \$4 a ton higher than Pittsburgh or Lorain on lapweld and one point lower discount, or \$2 a ton higher on all buttweld.

### BOILER TUBES

Seamless steel and lapweld commercial boiler tubes and locomotive tubes, minimum wall. Net base prices per 100 ft f.o.b. Pittsburgh, in carload lots

	Seamless Cold-Drawn	Lapweld Hot-Drawn Rolled
2 in. O.D. 13 B.W.G. ....	16.52	13.90
2 1/2 in. O.D. 12 B.W.G. ....	22.21	18.70
3 in. O.D. 12 B.W.G. ....	24.71	20.79
3 1/2 in. O.D. 11 B.W.G. ....	31.18	26.25
4 in. O.D. 10 B.W.G. ....	38.68	32.56

(Extras for less carload quantities)  
40,000 lb or ft and over ..... Base  
30,000 lb or ft to 39,999 lb or ft ..... 5 pct  
20,000 lb or ft to 29,999 lb or ft ..... 10 pct  
10,000 lb or ft to 19,999 lb or ft ..... 20 pct  
5,000 lb or ft to 9,999 lb or ft ..... 30 pct  
2,000 lb or ft to 4,999 lb or ft ..... 45 pct  
Under 2,000 lb or ft ..... 65 pct

### CAST IRON WATER PIPE

	Per net ton
6-in. to 24-in., del'd Chicago ....	\$70.33
6-in. to 24-in., del'd New York ....	69.60
6-in. to 24-in., Birmingham ....	61.00
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles or Seattle for all rail shipment; rail and water shipment less ..... 84.40	
Class "A" and gas pipe, \$5 extra; 4-in. pipe is \$5 a ton above 6-in. ....	

### BOLTS, NUTS, RIVETS, SET SCREWS

An increase of 12 pct applies to listings except Large Rivets

#### Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

#### Machine and Carriage Bolts

Base discount less case lots

	Percent Off List
1/2 in. & smaller x 6 in. & shorter ....	65 1/2
9/16 & 5/8 in. x 6 in. & shorter ....	63 1/2
3/4 to 1 in. x 6 in. & shorter ....	61
1 1/4 in. and larger, all lengths ....	59
All diameters over 6 in. long ....	59
Lag. all sizes ....	62
Flow bolts ....	65

#### Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

1/2 in. and smaller ....	62
9/16 to 1 in. inclusive ....	59
1 1/4 to 1 1/2 in. inclusive ....	57
1 1/2 in. and larger ....	56

On above bolts and nuts, excepting plow bolts, additional allowance of 10 pct for full container quantities. There is an additional 5 pct allowance for carload shipments.

#### Semifin. Hexagon Nuts U.S.S. S.A.E.

Base discount less keg lots

	U.S.S.	S.A.E.
7/16 in. and smaller ....	64	
1/2 in. and smaller ....	62	
1/2 in. through 1 in. ....	60	
9/16 in. through 1 in. ....	59	
1 1/4 in. through 1 1/2 in. ....	57	58
1 1/2 in. and larger ....	56	

In full keg lots, 10 pct additional discount. For 200 lb or more, freight allowed up to 50¢ per 100 lb, based on Cleveland, Chicago, Pittsburgh.

#### Stove Bolts

	Consumer
Packages, nuts loose ....	71 and 10
In packages ....	71
In bulk ....	80

On stove bolts freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago, New York on lots of 200 lb or over.

#### Large Rivets

(1/2 in. and larger)

	Base per 100 Lb
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham ....	\$4.75
F.o.b. Lebanon, Pa. ....	4.90

#### Small Rivets

(7/16 in. and smaller)

	Percent Off List
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham ....	65 and 5

#### Cap and Set Screws

	Percent Off List
(In packages) Consumer	
Upset full fin, hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in. ....	64
Upset set screws, cup and oval points	71
Milled studs ....	46
Flat head cap screws, listed sizes ....	36
Fillister head cap, listed sizes ....	51
Freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago or New York on lots of 200 lb or over.	

### FLUORSPAR

Maximum price f.o.b. consumer's plant, \$30 per short ton plus either (1) rail freight from producer to consumer, or (2) rail freight from Rosiclare, Ill., to consumer, whichever is lower.

	Base price per short ton
Effective CaF <sub>2</sub> Content:	
70% or more ....	\$33.00
65% but less than 70% ....	32.00
60% but less than 65% ....	31.00
Less than 60% ....	30.00

### LAKE SUPERIOR ORES

(51.50% Fe, Natural Content, Delivered Lower Lake Ports)

	Per Gross Ton
Old range, bessemer ....	\$5.45
Old range, non-bessemer ....	5.30
Mesaba, bessemer ....	5.20
Mesaba, non-bessemer ....	5.05
High phosphorus ....	5.05

Prices are for ore shipped on and after June 24, 1946, and for ore covered by adjustable pricing agreements authorized by Order No. 8, RMPP 113.

These prices do not reflect the recent ICC increase in freight rates.

### METAL POWDERS

Prices in cents per pound in ton lots, f.o.b. shipping point.

Brass, minus 100 mesh .. 19 1/4¢ to 21 1/4¢	
Copper, electrolytic, 100 and 375 mesh .. 23 1/2¢ to 27 1/2¢	
Copper, reduced, 150 and 200 mesh .. 22 3/4¢	
Iron, commercial, 100, 200, 325, mesh 96 + % Fe .. 11¢ to 16¢	
Swedish sponge iron, 100 mesh, c.l.f. N. Y. carlots, ocean bags .. 7.4¢ to 8¢	
Iron, crushed, 200 mesh and finer, 90 + % Fe carload lots .. 4¢	
Iron, hydrogen reduced, 300 mesh and finer, 98 + % Fe, drum lots .. 63¢	
Iron, electrolytic, unannealed, 325 mesh and coarser, 99 + % Fe .. 25¢ to 31¢	
Iron, electrolytic, annealed minus 100 mesh, 99 + % Fe .. 17¢	
Iron carbonyl, 300 mesh and finer, 98-99.8 + % Fe .. 90¢ to \$1.75	
Aluminum, 100, 200 mesh, carlots .. 25¢	
Antimony, 100 mesh .. 30¢	
Cadmium, 100 mesh .. \$1.75	
Chromium, 100 mesh and finer .. \$1.25	
Lead, 100, 200 & 300 mesh .. 13 1/4¢ to 16 3/4¢	
Manganese, minus 325 mesh and coarser .. 4¢ to 6 1/4¢	
Nickel, 150 mesh .. 51 1/4¢	
Silicon, minus 325 mesh and coarser .. 26¢ to 55¢	
Solder powder, 100 mesh .. 8 1/2¢ plus metal	
Tin, 100 mesh .. 58 3/4¢	
Tungsten metal powder, 98%-99%, any quantity, per lb. .... \$2.60	
Molybdenum powder, 99%, in 100-lb kegs, f.o.b. York, Pa., per lb. .... \$2.65	
Under 100 lb. .... \$2.90	

### COKE

	Net Ton
Furnace, beehive (f.o.b. oven)	
Connellsville, Pa. ....	\$8.75
Connellsville, Pa., hand drawn ..	9.35

#### Foundry, beehive (f.o.b. oven)

Fayette Co., W. Va. ....	8.10
Connellsville, Pa. ....	8.50

#### Foundry, Byproduct

Chicago, del'd ....	15.10
Chicago, f.o.b. ....	14.35
New England, del'd ....	16.04
Kearny, N. J., f.o.b. ....	14.40
Philadelphia, del'd ....	14.63
Buffalo, del'd ....	14.75
Portsmouth, Ohio, f.o.b. ....	12.85
Painesville, Ohio, f.o.b. ....	13.50
Erie, del'd ....	14.50
Cleveland, del'd ....	14.55
Cincinnati, del'd ....	14.60
St. Louis, del'd ....	15.10†
Birmingham, del'd ....	12.25

†Except producers situated in states other than Missouri, Alabama or Tennessee, sellers may charge a maximum delivered price of \$15.60 in the St. Louis Mo., and East St. Louis, Ill., switching districts.

### REFRACTORIES

(F.o.b. Works)

#### Fire Clay Brick

	Carloads Per 1000
Super-duty brick, St. Louis. ....	\$81.00
First quality, Pa., Md., Ky., Mo., Ill., Ohio ....	65.00
First quality, New Jersey ....	70.00
Sec. quality, Pa., Md., Ky., Mo., Ill. ....	59.00
Sec. quality, New Jersey ....	62.00
Sec. quality, Ohio ....	57.00
Ground fire clay, net ton, bulk. ....	9.50

#### Silica Brick

Pennsylvania and Birmingham ..	\$65.00
Chicago District ....	74.00
Silica cement, net ton (Eastern) ..	11.50
Chicago ....	12.50

#### Chrome Brick

	Per Net Ton
Standard chemically bonded, Balt., Plymouth Meeting, Chester ....	\$54.00

#### Magnesite Brick

Standard, Balt. and Chester ....	\$76.00
Chemically bonded, Baltimore ....	65.00

#### Grain Magnesite

Domestic, f.o.b. Balt. and Chester in sacks ....	\$44.50
Domestic, f.o.b. Chewelah, Wash., in bulk ....	22.00
in sacks ....	26.00
Clinker (dead burned) dolomite, bulk, per net ton, f.o.b. York, Pa. ....	10.55

# PRICES

## WAREHOUSE PRICES

Delivered metropolitan areas, per 100 lb.

Cities	SHEETS			STRIP			Plates ¼ in. and heavier	Structural Shapes	BARS		ALLOY BARS			
	Hot- Rolled (10 gage)	Cold- Rolled	Galvanized (24 gage)	Hot-Rolled		Cold- Rolled			Hot- Rolled	Cold- Finished	Hot- Rolled, A-8617-20	Hot- Rolled, A-8742-50 Ann.	Cold- Drawn, A-8617-20	Cold- Drawn, A-8742-50 Ann.
				6 in. and Under	Over 6 in.									
Philadelphia.....	\$3.774	\$5.139	\$5.249*	\$4.314	\$4.214	\$5.064	\$3.875	\$3.937	\$4.114	\$4.564	\$6.287	\$7.387	\$7.664	\$8.764
New York.....	3.856	4.889	5.501	4.375	4.275	5.075	4.049	4.038	4.134	4.584	6.338	7.438	7.684	8.784
Boston.....	4.05	5.031	5.725	4.518	4.418	4.985	4.203	4.023	4.356	4.856	6.503	7.603	7.756	8.856
Baltimore.....	3.64	5.118	5.365	4.293	4.193	.....	3.885	4.05	4.093	4.543	.....	.....	.....	.....
Norfolk.....	4.037	.....	5.862	4.577	4.477	.....	4.262	4.303	4.377	4.877	.....	.....	.....	.....
Chicago.....	3.475	4.425	5.40	3.85	3.85	4.90*	3.80	.....	3.75	4.20	6.05	7.15	7.20	8.30
Milwaukee.....	3.633	4.583	5.558	4.108	4.008	5.058*	3.958	3.958	3.908	4.358	6.308	7.408	7.458	8.558
Cleveland.....	3.575	.....	5.347	3.95	3.85	.....	3.65	3.88	3.60	4.20	6.277	7.377	7.20	8.30
Buffalo.....	3.575	4.625	5.20	4.211	4.111	4.961	3.921	3.65	3.60	4.20	6.05	7.15	7.20	8.30
Detroit.....	3.71	4.76	5.626	4.085	3.985	4.95	3.935	3.987	3.735	4.285	6.456	7.556	7.585	8.685
Cincinnati.....	3.671	4.721	5.296	4.046	3.946	5.002	3.952	3.983	3.902	4.502	6.441	7.541	7.602	8.702
St. Louis.....	3.643	4.593	5.622	4.118	4.018	5.222	3.968	3.968	3.918	4.522	6.472	7.572	7.622	8.722
Pittsburgh.....	3.575	4.625	5.20	3.95	3.85	4.70	3.65	3.65	3.60	4.20	6.05	7.15	7.20	8.30
St. Paul.....	3.817	4.767	5.666	4.292	4.192	5.000	4.142	4.142	4.092	4.852	.....	6.322	7.952	8.052
Duluth.....	3.817	4.767	5.666	4.292	4.192	.....	4.142	4.142	4.092	.....	6.472	6.572	.....	.....
Omaha.....	4.045	5.72	6.00	4.52	4.42	.....	4.37	4.37	4.32	4.945	.....	.....	.....	.....
Indianapolis.....	3.775	4.825	5.40	4.15	4.05	5.03	3.92	3.92	3.87	4.47	6.17	.....	7.32	.....
Birmingham.....	3.675	.....	5.20	4.05	3.95	.....	3.80	3.80	3.75	4.954	6.414	7.514	7.564	8.614
Memphis.....	4.221	.....	5.746	4.596	4.496	.....	4.346	4.346	4.296	4.821	.....	.....	.....	.....
New Orleans.....	4.359*	5.401	5.884	4.734	4.634	.....	4.484	4.484*	4.434*	5.175	.....	.....	.....	.....
Los Angeles.....	4.885	6.635 <sup>1</sup>	6.585	5.335	5.235	.....	4.835	4.735	4.685	5.065	.....	.....	.....	.....
San Francisco.....	4.435	6.035	6.585	4.885	4.785	.....	4.535	4.385	4.435	5.815	.....	.....	.....	.....
Seattle.....	4.905 <sup>5</sup>	7.305 <sup>2</sup>	6.435	4.635	4.535	.....	5.035 <sup>5</sup>	4.735 <sup>5</sup>	4.635 <sup>5</sup>	6.265	7.735 <sup>5</sup>	8.735 <sup>5</sup>	.....	9.585 <sup>5</sup>
Portland.....	4.905 <sup>4</sup>	.....	6.235	5.135	.....	.....	5.035 <sup>4</sup>	4.735 <sup>4</sup>	4.735 <sup>4</sup>	6.015	7.735	8.885	.....	.....
Salt Lake City.....	4.61	.....	6.70	5.94	5.84	.....	5.29	5.29	5.19	6.48	.....	.....	.....	.....

## BASE QUANTITIES

Standard unless otherwise keyed on prices.

**HOT-ROLLED:** Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

**COLD-ROLLED:** Sheets, 400 to 1999 lb; strip, extras on all quantities; bars, 1500 lb base.

**ALLOY BARS:** 1000 to 39,999 lb.

**GALVANIZED SHEETS:** 450 to 1499 lb.

**EXCEPTIONS:** (1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 450 to 3749 lb; (4) 300 to 4999 lb; (5) 300 to 10,000 lb; (6) 2000 lb and over; (7) 3500 lb and over; (8) 1000 lb and over.

(\*) Philadelphia: Galvanized sheet, 25 or more bundles.

Extra for size, quality, etc., apply on above quotations.

\* Add 29.1¢ for sizes not rolled in Birmingham.

\*\* City of Philadelphia only. Applicable freight rates must be added to basing point prices to obtain delivered price to other localities in metropolitan area.

## PIG IRON PRICES

Per gross ton, retroactive to May 29.

BASING POINT PRICES						DELIVERED PRICES (BASE GRADES)								
Basing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.	Consuming Point	Basing Point	Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.	
Bethlehem.....	29.00	29.50	30.00	30.50	.....	Boston.....	Everett.....	\$0.50 Arb.	29.50	30.00	30.50	31.00	.....	
Birdsboro.....	29.00	29.50	30.00	30.50	34.00	Boston.....	Birdsboro-Steelton...	4.47	.....	.....	.....	.....	38.47	
Birmingham.....	23.50*	24.88*	.....	29.50	.....	Brooklyn.....	Bethlehem.....	2.78	31.78	32.28	32.78	33.28	.....	
Buffalo.....	27.50	28.50	29.00	29.50	34.00	Brooklyn.....	Birdsboro.....	3.26	.....	.....	.....	.....	37.26	
Chicago.....	28.00	28.50	28.50	29.00	.....	Canton.....	Clev.Ygstin,Sharpevil.	1.54	29.54	30.04	30.04	30.54	.....	
Cleveland.....	28.00	28.50	28.50	29.00	.....	Canton.....	Buffalo.....	3.55	.....	.....	.....	.....	37.55	
Detroit.....	28.00	28.50	28.50	29.00	.....	Cincinnati.....	Birmingham.....	4.30	27.80*	29.18*	.....	.....	.....	
Duluth.....	28.50	29.00	29.00	29.50	.....	Cincinnati.....	Hamilton.....	1.24	.....	.....	29.74	.....	.....	
Erle.....	28.00	28.50	29.00	29.50	.....	Cincinnati.....	Buffalo.....	4.89	.....	.....	.....	.....	38.89	
Everett.....	29.00	29.50	30.00	30.50	.....	Jersey City.....	Bethlehem.....	1.70	30.70	31.20	31.70	32.20	.....	
Granite City.....	28.00	28.50	28.50	29.00	.....	Jersey City.....	Birdsboro.....	2.16	.....	.....	.....	.....	36.16	
Hamilton.....	28.00	28.50	28.50	29.00	.....	Los Angeles.....	Provo.....	5.25	31.25	31.75	.....	.....	.....	
Neville Island.....	28.00	28.50	28.50	29.00	.....	Los Angeles.....	Buffalo.....	16.33	.....	.....	.....	.....	50.33	
Provo.....	26.00	26.50	.....	.....	.....	Mansfield.....	Cleveland-Toledo.....	2.16	30.16	30.66	30.66	31.16	.....	
Sharpsville.....	28.00	28.50	28.50	29.00	.....	Mansfield.....	Buffalo.....	3.74	.....	.....	.....	.....	37.74	
Sparrows Point.....	29.00	29.50	.....	.....	.....	Philadelphia.....	Swedeland.....	0.93	29.93	30.43	30.93	31.43	.....	
Steelton.....	29.00	.....	.....	.....	34.00	Philadelphia.....	Birdsboro.....	1.38	.....	.....	.....	.....	35.38	
Swedeland.....	29.00	29.50	30.00	30.50	.....	San Francisco.....	Provo.....	5.25	31.25	31.75	.....	.....	.....	
Toledo.....	28.00	28.50	28.50	29.00	.....	San Francisco.....	Buffalo.....	16.33	.....	.....	.....	.....	50.33	
Youngstown.....	28.00	28.50	28.50	29.00	.....	Seattle.....	Provo.....	5.25	31.25	31.75	.....	.....	.....	
						Seattle.....	Buffalo.....	16.33	.....	.....	.....	.....	50.33	
						St. Louis.....	Granite City.....	0.50 Arb.	28.50	29.00	29.00	29.50	.....	
						St. Louis.....	Buffalo.....	7.86	.....	.....	.....	.....	41.86	

\* Republic Steel Corp. has been granted a \$2 increase on basic and foundry pig iron produced at Birmingham.

(1) Struthers Iron & Steel Co., Struthers, Ohio, may charge 50¢ per ton in excess of basing point prices for No. 2 foundry, basic, bessemer and malleable.

Charcoal pig iron base prices for Lyles, Tenn., and Lake Superior furnaces, \$33.00 and \$34.00, respectively. Newberry Brand of Lake Superior charcoal iron \$39.00 per g.t., f.o.b. furnace. Delivered to Chicago, \$42.34.

High phosphorus iron sells at Lyles, Tenn., at \$28.50.

Basing point prices are subject to switching charges; silicon differentials (not to exceed 50¢ per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct); phosphorus differentials, a reduction of 38¢ per ton for phosphorus content of 0.70 pct and over; manganese differentials, a charge not to exceed 50¢ per ton for each

0.50 pct manganese content in excess of 1.00 pct. \$2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and \$1 per ton extra for each additional 0.25 pct nickel.

Silvery iron, silicon 6.00 to 6.50 pct, C/L per g.t., f.o.b. Jackson, Ohio—\$34.00; f.o.b. Buffalo—\$35.25. Add \$1.00 per ton for each additional 0.50 pct Si. Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct. Add \$1.00 per ton for prices of comparable analysis.



# FERROALLOY PRICES

## Ferromanganese

78-82% Mn, maximum contract base price, gross ton, lump size, f.o.b. Baltimore, Philadelphia, New York, Birmingham, Rockdale, Rockwood, Tenn.  
 Carload lots (bulk) ..... \$135.00  
 Less ton lots (packed) ..... 148.50  
 F.o.b. Pittsburgh ..... 139.50  
 \$1.70 for each 1% above 82% Mn; penalty, \$1.70 for each 1% below 78%.  
 Briquets—cents per pound of briquet, freight allowed, 66% contained Mn.  
 Eastern Central Western  
 Carload, bulk .. 6.05 6.30 6.60  
 Ton lots ..... 6.65 7.55 8.55  
 Less ton lots ... 6.80 7.80 8.80

## Spiegeleisen

Contract prices, gross ton, lump, f.o.b. Palmerton, Pa.  
 16-19% Mn 19-21% Mn  
 3% max. Si 3% max. Si  
 Carloads ..... \$35.00 \$36.00  
 Less ton ..... 47.50 48.50  
 F.o.b. Pittsburgh, Chicago ..... 40.00

## Manganese Metal

Contract basis, lump size, cents per pound of metal, f.o.b. shipping point, freight allowed, eastern zone.  
 96% min. Mn, 0.2% max. C, 1% max. Si, 2% max. Fe.  
 Carload, bulk ..... 30  
 L.c.l. lots ..... 32

## Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.  
 Carloads ..... 32  
 Ton lots ..... 34  
 Less ton lots ..... 36

## Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, f.o.b. shipping point, freight allowed, eastern zone.

	Carloads	Ton	Less
0.10% max. C, 0.06% P, 90% Mn	21.00	21.40	21.65
0.10% max. C	20.50	20.90	21.15
0.15% max. C	20.00	20.40	20.65
0.30% max. C	19.50	19.90	20.15
0.50% max. C	19.00	19.40	19.65
0.75% max. C			
7.00% max. Si	16.00	16.40	16.65

## Silicomanganese

Contract basis, lump size, cents per pound of metal, f.o.b. shipping point, freight allowed. 65-70% Mn, 17-20% Si, 1.5% max. C.  
 Carload, bulk ..... 6.05  
 Ton lots ..... 6.70  
 Briquet, contract basis, carlots, bulk freight allowed, for lb of briquet. 5.80  
 Ton lots ..... 6.30  
 Less ton lots ..... 6.55

## Silvery Iron (electric furnace)

Si 14.01 to 14.50%, \$51.25 f.o.b. Keokuk, Iowa; \$48.00 f.o.b. Jackson, Ohio; \$49.25 f.o.b. Niagara Falls. Add \$1.00 per ton for each additional 0.50% Si up to and including 18%. Add \$1.00 per ton for low impurities, not to exceed: P—0.05%, S—0.04%, C—1.00%.

## Silicon Metal

Contract price, cents per pound contained Si, lump size, f.o.b. shipping point, freight allowed, for ton lots, packed.  
 Eastern Central Western  
 96% Si, 2% Fe.. 13.10 13.55 16.50  
 97% Si, 1% Fe.. 13.45 13.90 16.80

## Ferrosilicon Briquets

Contract price, cents per pound of briquet, bulk, f.o.b. shipping point, freight allowed to destination, 40% Si.  
 Eastern Central Western  
 Carload, bulk .. 3.60 3.75 3.90  
 Ton lots ..... 4.05 4.55 4.60  
 Less ton lots .. 4.45 4.80 4.85

## Electric Ferrosilicon

Contract price, cents per pound contained Si, lump size in carloads, f.o.b. shipping point, freight allowed.  
 Eastern Central Western  
 50% Si ..... 7.05 7.50 7.65  
 75% Si ..... 8.55 8.70 9.25  
 80-90% Si ..... 9.50 9.65 10.15  
 90-95% Si ..... 11.80 11.95 12.40

## Ferrochrome

(65-72% Cr, 2% max. Si)  
 Contract prices, cents per pound, contained Cr, lump size in carloads, f.o.b. shipping point, freight allowed.

	Eastern	Central	Western
0.06% C	23.00	23.40	24.00
0.10% C	22.50	22.90	23.50
0.15% C	22.00	22.40	23.00
0.20% C	21.50	21.90	22.50
0.50% C	21.00	21.40	22.00
1.00% C	20.50	20.90	21.50
2.00% C	19.50	19.90	20.50

66-71% Cr, 4-10% C .. 14.50 14.90 15.00  
 62-66% Cr, 5-7% C .... 15.05 15.45 15.55

Briquets—contract price, cents per pound of briquet, f.o.b. shipping point, freight allowed, 60% chromium.

	Eastern	Central	Western
Carload, bulk ..	9.20	9.50	9.90
Ton lots .....	9.80	10.30	11.80
Less ton lots ..	10.10	10.60	12.10

## High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 2¢ per lb to regular low-carbon ferrochrome price schedule. Add 2¢ for each additional 0.25% N. High-carbon type: 66-71% Cr, 4-5% C, 0.75% N. Add 5¢ per lb to regular high-carbon ferrochrome price schedule.

## S. M. Ferrochrome

Contract price, cents per pound chromium contained, lump size, f.o.b. shipping point, freight allowed.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

	Eastern	Central	Western
Carload .....	15.60	16.00	16.10
Ton lots .....	16.65	17.30	18.50
Less ton lots ..	17.30	17.95	19.15

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

	Eastern	Central	Western
Carload .....	20.00	20.40	21.00
Ton lots .....	21.00	21.65	22.85
Less ton lots ..	22.00	22.65	23.85

## Chromium Metal

Contract prices, cents per lb, chromium contained, carload, f.o.b. shipping point, freight allowed. 97% min. Cr, 1% max. Fe.

	Eastern	Central	Western
0.20% max. C ..	83.50	85.00	86.25
0.50% max. C ..	79.50	81.00	82.25
9.00% min. C ..	79.50	81.00	82.25

## Chromium—Copper

Contract price, cents per pound of alloy, f.o.b. Niagara Falls, freight allowed east of the Mississippi. 8-11% Cr, 88-90% Cu, 1.00% max. Fe, 0.50% max. Si.  
 Shot or ingot ..... 45¢

## Calcium—Silicon

Contract price per lb of alloy, lump, f.o.b. shipping point, freight allowed.  
 30-35% Ca, 60-65% Si, 3.00% max. Fe or 28-32% Ca, 60-65% Si, 6.00% max. Fe.

	Eastern	Central	Western
Carloads .....	13.00	13.50	15.55
Ton lots .....	14.50	15.25	17.40
Less ton lots ..	15.50	16.25	18.40

## Calcium—Manganese—Silicon

Contract prices, cents per lb of alloy, lump, f.o.b. shipping point, freight allowed.

16-20% Ca, 14-18% Mn, 53-59% Si.

	Eastern	Central	Western
Carloads .....	15.50	16.00	18.05
Ton lots .....	16.50	17.35	19.10
Less ton lots ..	17.00	17.85	19.60

## Calcium Metal

Eastern zone contract prices, cents per pound of metal, f.o.b. shipping point, freight allowed. Add 1¢ for central zone; 5¢ for western zone.

	Cast	Turnings	Distilled
Ton lots .....	1.35	1.75	4.25
Less ton lots ..	1.60	2.00	5.00

## CMSZ

Contract price, cents per pound of alloy, f.o.b. shipping point, freight allowed.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

	Eastern	Central	Western
Ton lots .....	12.00	12.75	14.75
Less ton lots ..	12.50	13.25	15.25

Alloy 5: 50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

	Eastern	Central	Western
Ton lots .....	11.75	12.50	14.50
Less ton lots ..	12.25	13.00	15.00

## SMZ

Contract price, cents per pound of alloy, f.o.b. shipping point, freight allowed.

60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe.

	Eastern	Central	Western
Ton lots .....	12.00	12.85	14.60
Less ton lots ..	12.50	13.35	15.10

## Other Ferroalloys

Ferrotungsten, standard, lump o. ¼ X down, packed, f.o.b. plant Niagara Falls, Washington, Pa., York, Pa., per pound contained T, 5 ton lots, freight allowed.. \$1.38  
 Ferrovandium, 35-55%, contract basis, f.o.b. plant, freight allowances, per pound contained V. \$2.70  
 Openhearth ..... \$2.80  
 Crucible ..... \$2.90  
 High speed steel (Primos) .. \$1.10  
 Vanadium pentoxide, 88-92% V<sub>2</sub>O<sub>5</sub> technical grade, contract basis, per pound contained V<sub>2</sub>O<sub>5</sub>. \$1.10  
 Ferrocolumbium, 50-60%, contract basis, f.o.b. plant, freight allowed, per pound contained Ch. \$2.25  
 Ton lots ..... \$2.30  
 Less ton lots ..... \$2.30  
 Ferromolybdenum, 55-75%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo ..... 96¢  
 Calcium molybdate, 40-45%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo ..... 80¢  
 Molybdenum oxide briquets, 48-52% Mo, f.o.b. Langeloth, Pa., per pound contained Mo ..... 80¢  
 Molybdenum oxide, in cans, f.o.b. Langeloth and Washington, Pa., per pound contained Mo ..... 80¢  
 Ferrotitanium, 40-45%, 0.10% C max., f.o.b. Niagara Falls, N. Y., ton lots, per pound contained Ti \$1.33  
 Less ton lots ..... \$1.28  
 Ferrotitanium, 20-25%, 0.10% C max., ton lots, per pound contained Ti ..... \$1.35  
 Less ton lots ..... \$1.40  
 High-carbon ferrotitanium, 15-20%, 6-8% C, contract basis, f.o.b. Niagara Falls, freight allowed, carloads ..... \$142.50  
 Ferrophosphorus, 18%, electric or blast furnaces, f.o.b. Anniston, Ala., carlots, with \$3 unitage freight equalized with Rockdale, Tenn., per gross ton ..... \$58.50  
 Ferrophosphorus, Electrolytic, 23-26% carlots, f.o.b. Monsanto (Siglo), Tenn., \$3 unitage freight equalized with Nashville, per gross ton ..... \$75.00  
 Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy ..... 14¢  
 Carload lots ..... 14¢  
 Zirconium, 12-15%, contract basis, lump, f.o.b. plant, freight allowed, per pound of alloy ..... 4.60¢  
 Carload, bulk ..... 5.75¢  
 Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Niagara Falls, carload ..... 7.95¢  
 Ton lots ..... 8.50¢  
 Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound Car lots ..... 9.25¢  
 Ton lots ..... 9.75¢  
 Less ton lots ..... 9.75¢

## Boron Agents

Contract prices per pound of alloy, f.o.b. shipping point, freight allowed.  
 Ferroboration, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C.  
 Eastern Central Western  
 Less ton lots.. \$1.30 \$1.3075 \$1.329

Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C.  
 Ton lots ..... \$1.89 \$1.903 \$1.935  
 Less ton lots... 2.01 2.023 2.055

Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni.  
 Less ton lots.. \$2.10 \$2.1125 \$2.1445

Silicaz No. 3, contract basis, f.o.b. plant, freight allowed, per pound of alloy.

	Eastern	Central	Western
Ton lots .....	25¢	26¢	

Silvaz No. 3, contract basis, f.o.b. plant, freight allowed, per pound of alloy.

	Eastern	Central	Western
Carload lots .....	58¢	59¢	
Ton lots .....	58¢	59¢	

Grainal, f.o.b. Bridgeville, Pa., freight allowed, 50 lb and over.

	Eastern	Central	Western
No. 1 .....	87.5¢	60¢	45¢
No. 6 .....			
No. 79 .....			

Bortram, f.o.b. Niagara Falls  
 Ton lots, per pound ..... 45¢  
 Less ton lots, per pound ..... 50¢

## RFC to Underwrite Output Of 19,400 Steel Trussed Houses

### Washington

• • • Steel-trussed, factory-built houses which sell at \$5400 and \$6400 when ready for occupancy are the first products for which the government will enter into a guaranteed market contract under the veterans emergency housing program.

Housing Expediter Wilson W. Wyatt has issued directions to the RFC to underwrite production of 19,400 such houses by the Home-Ola Corp. of Chicago. With the government assuming the marketing risk, the firm will step up its production from the present 10 a day to 30 by January and 100 a day by June.

The \$5400 house is a 1½-story type, 20 x 24, while the \$6400 model is one story, 24 x 32. Each type provides 768 sq ft of floor space and the sizes of the five rooms and bath are identical.

The houses are erected on steel beams bolted to steel plates resting on concrete foundations. Steel trusses are used for the one story type because of the increased ceiling space required by putting the rooms on one floor.

Plywood is used for the walls, floors, partitions, ceilings and roofs. Wood parts, comprising two-thirds of the house, are to be shipped five houses to a box car from Tacoma, Wash.; White, Wash.; and Chicago.

Steel and metal parts are to be shipped from the firm's plant in Chicago, five units to a truck.

Completed cost may vary slightly with cost of the land since the \$5400 and \$6400 quotation includes a \$647 and \$800 allowance for lots on which to build.

### RFC War Plants Now Returning 16,300 Tons Of Silver to Treasury

#### Washington

• • • Approximately 16,300 tons of silver borrowed in 1942 for use in RFC war plants is now being returned to the Treasury.

The silver was borrowed by DPC for installation in war plants in the form of electrical conductors, chiefly bus bars, in order to release an equivalent amount of copper for other vital war purposes.

The installations were made in 13 plants located in 11 states. The plants were engaged in the production of aluminum and magnesium. Aluminum reduction plants were the principal users of this silver. These plants were located at Burlington, N. J.; Maspeth, N. Y.; Mead, Wash.; Torrance and Riverbank, Calif.; and Troutdale, Ore.

The silver from the West Coast plants will be shipped to the Denver mint to be used for coinage. That at Maspeth, amounting to 5000 tons, will go to New York for storage in the bullion depository. The remainder in the East will be used by the Philadelphia mint for either coinage ingots or commercial bars.

The mint has determined that small amounts of impurities, such as oil and sulfur, picked up by the silver in the course of its war work will not affect its use for coinage. At first it was thought the silver might have to be processed for removal of these impurities before being recast into coinage ingots, but this was found to be unnecessary and means a great saving in processing costs.

In most of the war plants, silver loss or damage apparently was negligible. In some instances there was loss from such causes as oxidation, melting or the effects of acid. Preliminary estimates are that the entire loss will be but a small percentage of the total weight of 474,194,634 fine troy oz originally delivered to the plants. The war plant silver is carried on the Treasury's books at a total value of about \$551,000,000. Most of it is "monetized" silver, valued at \$1.29 per oz.

As presently stored, under the protection of RFC guards, the silver is mostly in the form of slabs cut from bus bar sections, the slabs being 8 to 12 in. wide, approximately ½ in. thick, and 2 to 6 ft long.

In addition, about 138 tons of silver will be recovered from large electrical transformers, in which it was used in place of copper as winding material.

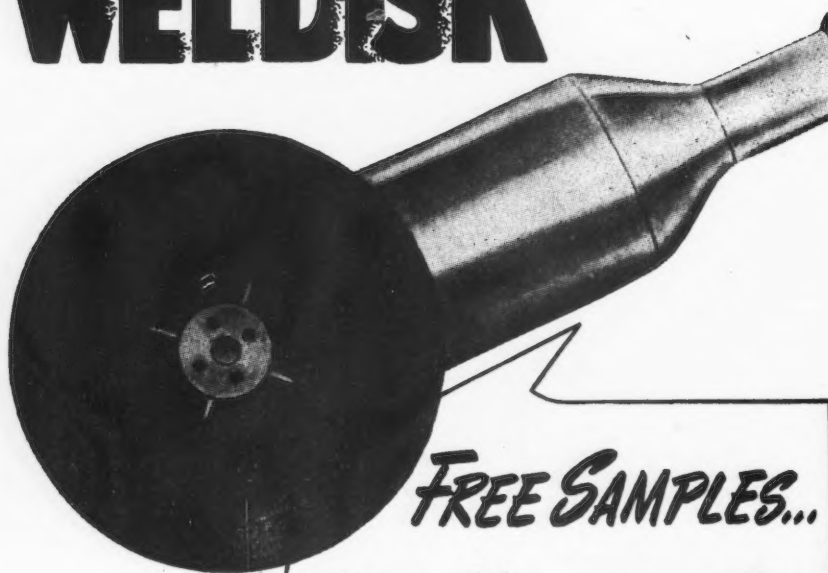
The War Dept. still retains about 14,000 tons of Treasury silver, borrowed for electrical conductor use in the atomic bomb project at Oak Ridge, Tenn.

**A HUNDRED A DAY:** Backed by an RFC guaranteed market contract Home-Ola Corp. of Chicago will step up production on this type of prefabricated house to 100 a day by June. Steel beams bolted to steel plates are used on the foundation and steel trusses increase the headroom in the house.





# WELDISK



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## NEWS OF INDUSTRY

### **Announces Changes In Engineering Division Of Ford Motor Co.**

*Detroit*

• • • Completion of Ford Motor Co.'s reorganization of its engineering division has been announced by Harold T. Youngren, director of engineering. Appointed last July to head all engineering and research activities of the company, Mr. Youngren has created several new departments and effectively coordinated the work of major departmental units.

Top departmental heads of the several engineering divisions of Ford are:



W. S. James

William S. James will be in charge of the research department. He was associated with Studebaker for 18 yr as research engineer and chief engineer.

Mr. James is a council member of the Society of Automotive Engineers and served as national president in 1944. He is also active in the American Society of Testing Materials.

The styling department of Ford will be in charge of E. T. Gregorie who began his career as a designer of fine yachts and was later associated with Rolls Royce in New York and with Hooper & Co. and Rootes Ltd., custom body builders in London. He joined Ford in 1931 and is credited with the design of the Lincoln Continental.

All administrative functions, including budget expense, planning and scheduling, cost engineering

and various other functions incidental to the operation of the engineering division will be headed by V. Y. Tallberg. Mr. Tallberg joined the International Div. of Ford in 1928, and has spent most of his time abroad.



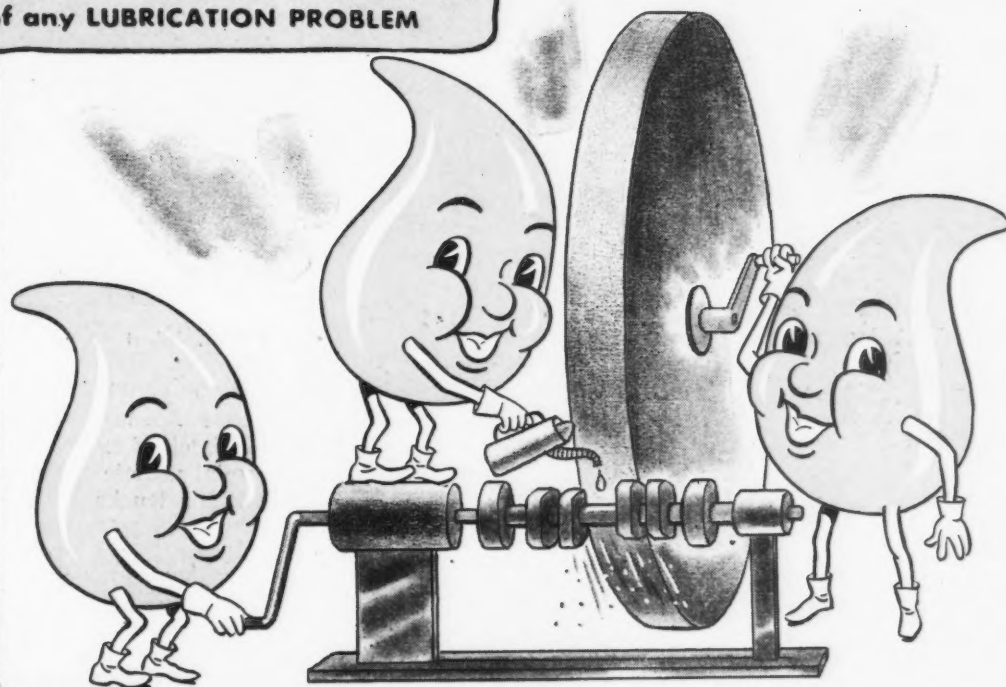
V. Y. Tallberg

At the outbreak of the war.



*Call the*

**SHELL LUBRICATION ENGINEER as  
the FIRST STEP to the RIGHT SOLUTION  
of any LUBRICATION PROBLEM**



## **SHELL GRINDING OIL PREVENTS RUSTING OF PRECISION-GROUND PARTS**

**PROBLEM:** Manufacturer of tiny precision parts found he could get required finish only by using a combination of special wheels together with a special grinding oil which was lacking in protective properties. The special wheels were a nuisance, but the real problem was the quick rusting of parts finished with this grinding oil.

**SOLUTION:** When the Shell Lubrication Engineer surveyed the problem, he suggested this test, which was made:

1. A grinder, equipped with standard wheels, was used with Shell Virgo Oil as the grinding fluid to produce a handful of the parts in question.

2. These parts were then set aside... the coating of Shell Virgo Oil their only protection against rust.

At the end of two months, no sign of rusting could be found. The manufacturer pronounced the finish obtained with standard wheels satisfactory... and ordered Shell Virgo Oil for all grinders.

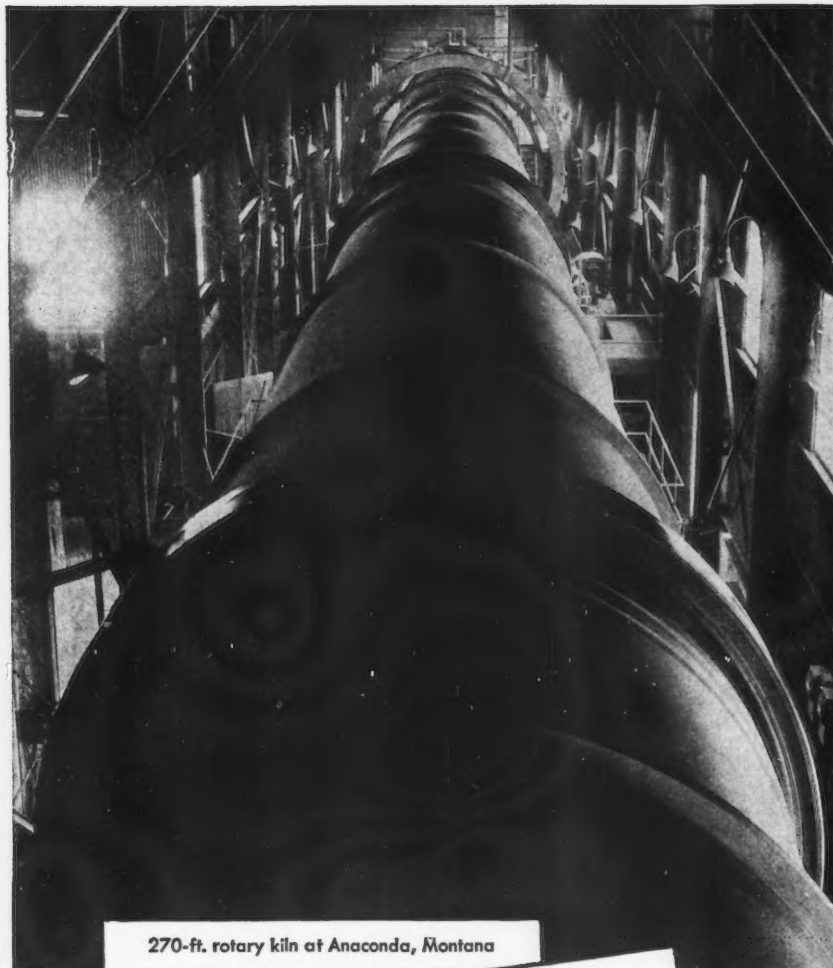
**CONCLUSION:** It pays to consult the Shell Lubrication Engineer, regardless of the nature or size of your lubricating problem. For informative literature on Metal-Working oils, write Shell Oil Company, Incorporated, 50 West 50th Street, New York 20, N. Y.; or 100 Bush Street, San Francisco 6, California.

## **SHELL METAL-WORKING OILS**

**For every metal... for every operation**







270-ft. rotary kiln at Anaconda, Montana

# Anaconda MANGANESE NODULES

## AVERAGE ANALYSIS

Mn	60%
SiO <sub>2</sub>	8%
Al <sub>2</sub> O <sub>3</sub>	0.76%
Fe	3.1%
P	0.06%

46381



**ANACONDA COPPER MINING COMPANY**

Offices: 25 Broadway, New York 4, N. Y.

Anaconda, Montana

## NEWS OF INDUSTRY

he was Ford chief engineer at Cologne, Germany. He has had various assignments at Dearborn in production, quality control and engineering.



H. H. Gilbert

H. H. Gilbert will be in charge of passenger car engineering for Lincoln - Mercury Div. From 1922 until 1939 Mr. Gilbert held various posts with Cadillac Div. of General Motors, joining Ford in 1939.

Dale Roeder with Ford since 1925 is chief engineer of the commercial vehicle department which includes trucks, buses and tractors.



H. S. Currier

Mr. Roeder has been chief of commercial vehicle design since 1929.

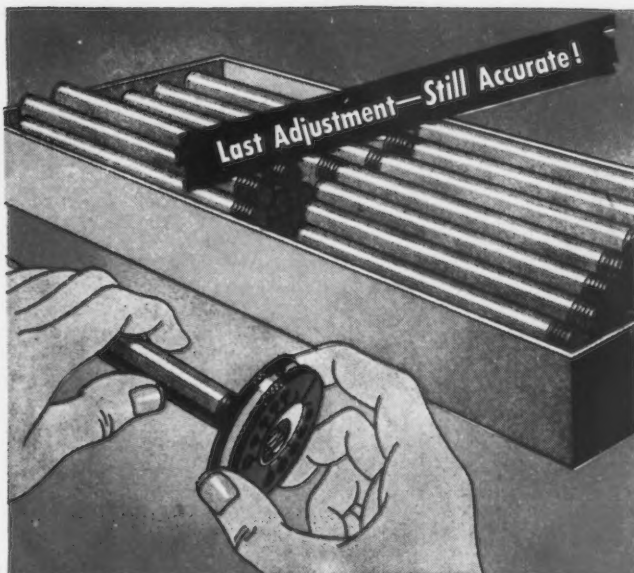
H. S. Currier who will supervise Ford passenger car engineering was, until recently, chassis engineer at Oldsmobile Div. of General Motors. Before joining Oldsmobile in 1929, Mr. Currier was employed by Cadillac Motor Co., the White Motor Co., the Lafayette and Studebaker Corps.

L. L. Beltz will be head of the electrical engineering department. He has previously been associated with Reo Motor Co., the Studebaker Corp., and the Packard Motor Car Co. where he was chief of electrical engineering.

Albert W. Frehse, formerly with Chevrolet Div. of General Motors will be in charge of test facilities of the Ford Co. including track, wind tunnel and road tests.

The engineering division's patent and vehicle department will be in charge of E. C. McRae who has headed the Ford patent department since 1925.

An industrial relations division has been established to supervise the activities of the Ford engineering personnel department. This division will be in charge of Wilson A. Jones.



# Amazing Adjustable Thread Ring Gage

*Starts round*



*Stays round*



## 5-PLUS FEATURES

- 1 Accurate and stable
- 2 Long wear life
- 3 Light weight
- 4 Positive identification
- 5 Positive adjustment

A NEW WAY to cut inspection costs—shift to the New Woodworth Adjustable Thread Ring Gage.

The design of this gage gives you long life accuracy, never before possible with conventional thread ring gages. Because of the accuracy, gage life is increased many times. One large plant is getting 12½ times longer service than with the old style gages.

*Think what this will mean to your inspection costs.*

ACCURACY YOU CAN TRUST

WRITE FOR FOLDER 46R

# WOODWORTH

N. A. WOODWORTH CO., SALES DIVISION, 1300 E. NINE MILE ROAD • DETROIT 20, MICHIGAN

PRECISION GAGES • PRECISION MACHINED PARTS • DIAPHRAGM CHUCKS • ADJUSTABLE CLAMPING JIGS • SPECIAL TOOLS



## COKE OVEN EQUIPMENT



## QUENCHING CARS AND LOCOMOTIVES

All Atlas Coke Oven Equipment is of heavy-duty construction permitting the peak operating conditions required in today's stepped-up production schedules. As a result of years of experience, Atlas is able to design and build equipment, to meet the requirements of each particular coke plant. Detailed information available on request.

### Other ATLAS Products

Ore Transfer Cars	Locomotives for
•	Switching and Interplant
Scale Charging Cars	Haulage
•	•
Electrically Operated Cars	Turntables
for Every Haulage Purpose	

*The* **ATLAS CAR & MFG. CO.**

ENGINEERS

MANUFACTURERS

1100 IVANHOE RD. CLEVELAND 10, OHIO, U. S. A.

## Metal Congress Will Feature Salon Exhibit Of Photomicrographs

Cleveland

• • • American Society for Metals will sponsor an exhibit of photomicrographs at the National Metal Congress and Exposition in Atlantic City the week starting Nov. 18, for the many American metallographers who will have an opportunity to compare their best productions.

There will be no restrictions as to size of prints or method of mounting—the entrant himself is to decide.

Ample wall space will be provided in the auditorium at Atlantic City to show the individual entries to good advantage. The only requirements are that each photographic print shall be mounted on stiff cardboard, and that the mount shall give the name of the metallographer and the usual identifications, such as type of metal, etchant, magnification, and any special information as desired.

All exhibits are to be delivered via prepaid express or registered parcel post to the American Society for Metals, Metallographic Exhibit, Municipal Auditorium, Atlantic City, N. J., not later than Tuesday, Nov. 12. Exhibits will be returned to owners by prepaid express during the week of Nov. 25.

A committee of judges will be appointed by the Metal Congress management, which will award prizes in the various classifications. A blue ribbon and an ASM book will be awarded the photograph judged best in each class. Honorable mention and an ASM book will be awarded other photographs closely approaching the blue ribbon winner in excellence.

Blue ribbons will be awarded for the best micrograph in the following ten classifications: (1) cast iron; (2) carbon or low-alloy steel; (3) stainless or heat resisting alloy; (4) aluminum or magnesium alloy; (5) other nonferrous alloy; (6) weld structure; (7) best micrograph in natural colors; (8) best micrograph using penetrating rays (nonoptical) or other unconventional technique; (9) best micrograph (10 diameter or lower power) showing structure

# Steel-Weld

## FABRICATION

Plant capacity to handle any job, and every modern facility to insure accuracy and encourage excellence, plus master craftsmen who take genuine pride in their accomplishments in the welding art, add up to better Steel-Weld Fabrication by Mahon . . . it is instantly apparent in the finished product. Mahon design engineers are always available to assist you in adaptation problems or redesign from a standpoint of strength, economy, or appearance.

Address STEEL-WELD DIVISION  
**THE R. C. MAHON COMPANY**  
Home Office and Plant, Detroit 11, Mich.  
Western Sales Division, Chicago 4, Ill.

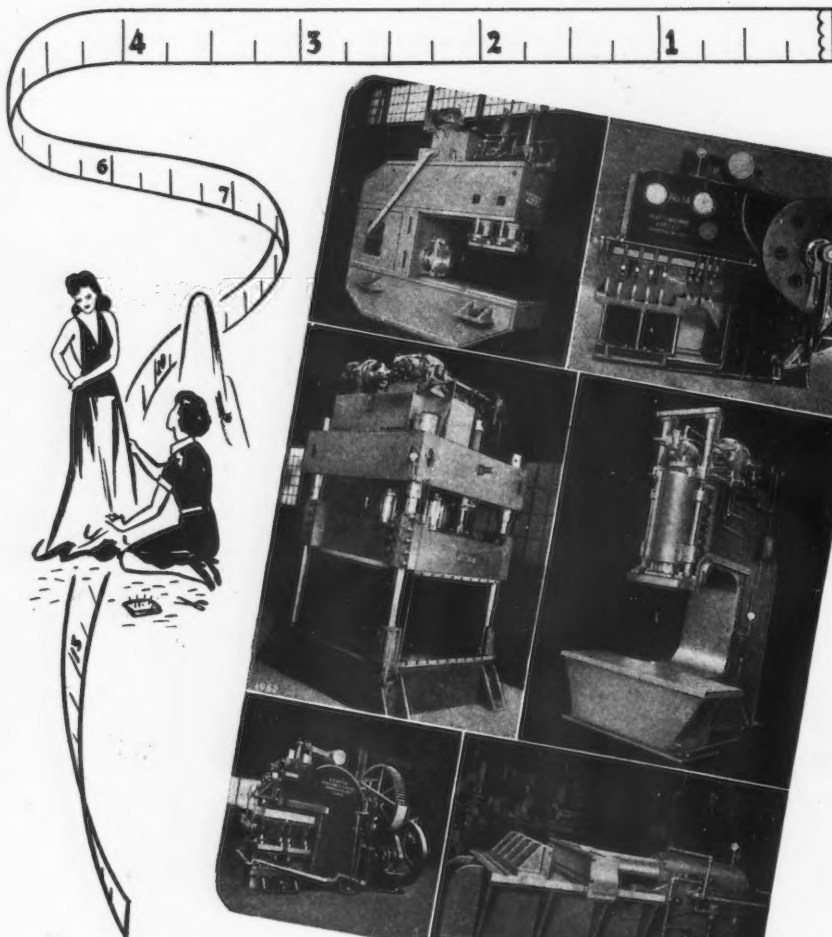


# MAHON

Engineers and Fabricators of Welded Steel Machine Bases and Frames, and Many Other Welded Steel Products



# BEATTY machines are "Made to Measure"



**BEATTY** Heavy Metal Working Equipment is built not just to do A job, but to do THE job. Special production problems call for special equipment, and when special equipment must be designed wise industrialists call for a BEATTY engineer. Next time you have a heavy metal fabricating problem, let a BEATTY engineer help you find the answer.

#### BUILDERS OF:

Mechanical and Hydraulic Punches, Presses, Shears, Spacing Tables, Bulldozers, Pipe Benders and Extruding Machines.



## BEATTY MACHINE AND MFG. COMPANY

HAMMOND, INDIANA

#### NEWS OF INDUSTRY

however developed (flow lines in forgings, ghost lines in plates, in-gotism, casting defects, etc.); and (10) best series showing transitions during phases or composition changes during manufacturing processes, during plastic deformation, etc.

Finally a special grand award certificate will be made for the best photograph in the show.

### Cross Hauling Scrap Becoming Magnified

Washington

... Pressure of steel mills upon their customers for the return of scrap generated in the fabrication and machining of steel results in cross hauling and wasteful use of transportation facilities, Edwin C. Barringer, president and executive secretary of the Institute of Scrap Iron & Steel, declared in a conference with A. H. Gass, Chief of the Railroad Div. of the Office of Defense Transportation.

Normally, Barringer pointed out, scrap tends to be consumed locally and moves on the basis of the lowest freight involved in returning it to consumption. In a sense, it was claimed, scrap brokers function in the capacity of traffic managers in routing scrap back to the mills.

"But with steel mills short of scrap and requesting their customers to ship back their scrap, cross hauling has been greatly magnified," said Barringer. "For example, some scrap that is generated in the Chicago district is being shipped to Detroit, while scrap that arises in Detroit is being moved to Chicago.

"It is known that scrap being produced in eastern Pennsylvania is moving as far West as West Virginia, and that scrap from Michigan points is going to southern Ohio.

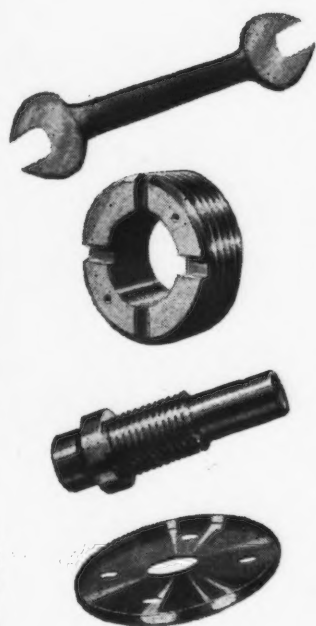
"In some cases, mills have made arrangements through their brokers to trade scrap and save transportation facilities and freights, but the practice in general is resulting in a wasteful use of transportation facilities. If the scrap industry were permitted to function in a normal manner, the delivered cost of scrap to consumers could be lowered measurably and normal movements restored."

Now is the time  
to take advantage  
of OAKITE'S

# COST-CUTTING

## materials and methods for Cleaning and Surface Conditioning

FORGINGS...DIE  
CASTINGS...MACHINED  
PARTS...STAMPINGS



**W**HATEVER your product... whether the metal is steel, cast iron, aluminum, brass, copper, bronze, zinc, magnesium... the intermediate and final cleaning and surface conditioning operations before final finishes are applied, must be performed with exacting thoroughness and come within specified cost limits.

### Final Finish Depends on Thorough Preliminary Cleaning

Here is where cost-cutting Oakite cleaning and surface-conditioning materials, each one designed for use on certain metals, and the successful experience gained in applying them to forgings, die castings, machined parts and stampings, can be helpful to you. Used in tank or automatic washing machine, these high quality Oakite materials give you the chemically or physically clean surfaces so essential to the finish you want.

### No Substitute for Experience

There is no substitute for successful experience and "know-how." It is why so many thousands of leading concerns in the metal working industries continue to rely on Oakite materials and the technical personalized service back of them. We should like to serve you in the same practical way.

### Your Production Cleaning Problem Invited

If you have a production cleaning operation that you feel could be speeded up, improved, or its cost lowered, our Technical Representative in your locality will be glad to stop in and discuss it with you. There is no obligation. Your letterhead inquiries invited and promptly answered.

Oakite Products, Inc., 24 Thames Street, New York 6, N.Y.  
Technical Service Representatives Located in All Principal Cities of the United States and Canada

# OAKITE *Specialized* CLEANING

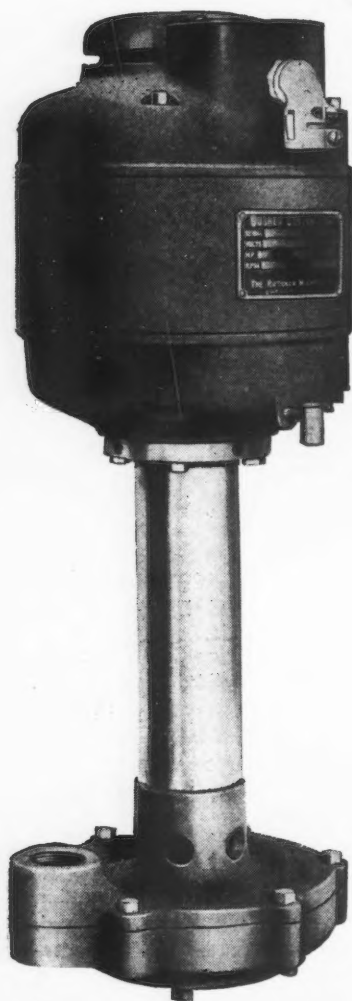
MATERIALS • METHODS • SERVICE



# ADAPTABLE

IS THE WORD FOR

## RUTHMAN GUSHER COOLANT PUMP



Model TL7320

Yes, Ruthman Gusher Coolant Pumps are adaptable. Our line includes immersed types, tank units, pipe connected types, flange mounted and plain drive types, in capacities from 1/30 to 2 h.p.

They offer split second control of coolants, high flushing capacity, sturdy one piece vertical shaft and exclusive features available only on Gusher Coolant Pumps.

*Write for catalog 11B.*

There's a "Gusher" for every coolant pump requirement.

**THE RUTHMAN MACHINERY CO.**

1821 READING ROAD CINCINNATI 2, OHIO

THE "GUSHER"

A MODERN PUMP FOR MODERN MACHINE TOOLS

### NEWS OF INDUSTRY

#### *Chapters of Institute Of Scrap Iron Hold Election of Officers*

*New York*

• • • Max Sidell, president of the Seattle Iron & Metal Corp., Seattle, has been elected president of the Pacific Northwest Chapter of the Institute of Scrap Iron & Steel Inc., succeeding Harry Schwartz of the Alaska Junk Co., Seattle.

Other officers of the Pacific Northwest Chapter are: First vice-president, Moe Michaelson, Riverside Junk Co., Everett, Wash.; second vice-president, Leo Bloch, M. Bloch & Co., Seattle; secretary, David Sidell, Seattle Iron & Metal Corp., Seattle; treasurer, Harry Sidell, also of the Seattle Iron & Metal Corp.

Members of the executive committee are: Harry Schwartz, Jules Glant, Pacific Iron & Metal Co., Seattle; Harry Neider, Neider & Marcus, Seattle; Morris Bloch, M. Bloch & Co., Seattle; Jack Radinsky, B. Radinsky & Sons, Seattle; Carl Sternoff, Sternoff Iron & Metal Works, Seattle; Harry Keisler, Dulien Steel Products, Inc., Seattle; Leslie Sussman, Tacoma Junk Co., Tacoma; Ben Endelman, Spokane Metals Co., Spokane; Nate Schuman, Bellingham Iron & Metals, Bellingham, Wash.

Also Frank I. Kilcline, of the Luntz Iron & Steel Co., Kokomo, Ind., has been re-elected for a year as president of the Indiana Chapter of the Institute.

Other officers of the Indiana Chapter are: Vice-president, Maurice Epstein, Epstein Bros., Indianapolis; secretary-treasurer, H. A. Alpert, J. Solotken & Co., Inc., Indianapolis.

Members of the executive committee are: Frank Cohen of Cohen Bros., Connersville; William Dumes of Dumes Auto Parts & Salvage, Evansville; Allison Falender, Falender Iron & Metal, Indianapolis; Sam Hurwich, Hurwich Iron Co., South Bend; Ben Kroot, Joseph Kroot Co., Columbus; Maurice Perk, Maurice Perk Co., Indianapolis; Meyer Ruchman, Indiana Rolling Mill Baling Corp., Fort Wayne; Meyer Sagalowsky, Sagalowsky Bros., Indianapolis; Harold Weinstein, Calumet Iron & Supply Co., East Chicago.

# Faster Loading

Through Automatic  
Clamping on *American*  
Duplex Ram  
Surface Broaching  
Machine

**F**ASTER loading means higher production — and you can get both with *American* Vertical Hydraulic Duplex Ram Broaching Machines. Uniform hydraulic clamping of parts makes loading fast and uniform, with minimum effort for the operator. Electrical controls and continuous cutting operation also contribute to maximum output at minimum unit cost. Every stroke is a cutting stroke due to alternate action of the two rams.

Engineered by *American* as the answer to many mass production problems, the Duplex Ram Broaching Machine is only one of a complete line of *American* machines and tools for metal finishing. Whatever your forming or finishing job, let *American* engineers recommend the right equipment for top efficiency. This is part of *American's* complete broaching service — machines, tools and engineering. Ask for complete details today!

Right: Broaching joint face on differential bearing cap with standard *American* SBD-42-10 Vertical Hydraulic Duplex Ram Surface Broaching Machine. Left fixture is in broaching position; right fixture is in "out" position for loading. Cycle is continuous. Operator loads one side while the other is broaching. Below: the finished part, after broaching. Production may be as high as 10 seconds per finished piece.

MEMBER  
**BROACHING TOOL  
INSTITUTE**

*American*  
**BROACH AND  
MACHINE CO.**

ANN ARBOR, MICHIGAN  
BROACHING MACHINES  
PRESSES  
BROACHING TOOLS  
SPECIAL MACHINERY





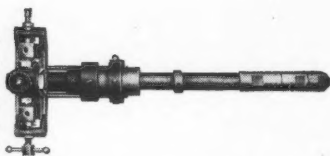


# TYPE "SAL"

OIL BURNER for DUAL FUEL SYSTEMS  
or LARGE CAPACITY BOILERS

## IN DUAL FUEL SYSTEMS

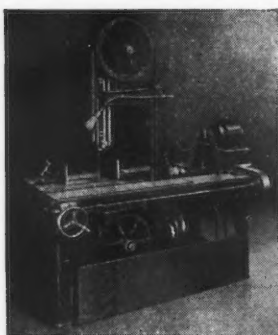
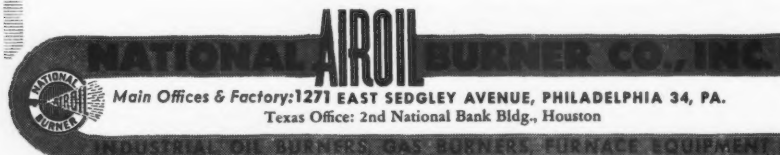
Type "SAL" Steam Atomizing Oil Burner (In combination with most standard pulverized coal registers) provides inexpensive, safe ignition of cold furnaces; excellent for "banked fire" periods or to maintain coal ignition; assures alternate 100% reserve fuel burning during repair of coal equipment; permits quick changeover, from one fuel to the other without shutdown.



## IN LARGE CAPACITY BOILERS

Type "SAL" Oil Burner is equally economical and efficient in firing open hearth furnaces, rotary kilns, dryers, petroleum pipe stills and cracking coils, or other large furnaces where high fuel rate per burner with great flexibility in operating range is essential.

Write for Bulletin 24, today.



*No other  
saw can  
do as  
much!*

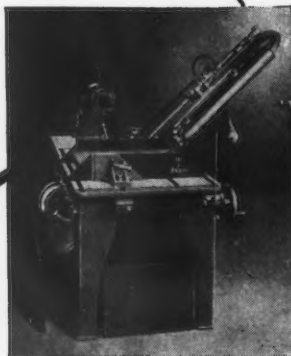
**No Other Saw  
Can Do As Much!**  
Universal Band  
MARVEL 18" capacity, will  
Saw 18" x 18" trim, split bar  
cut-off, slot, trim, split bar  
stock, rough, structural sec-  
tions, moldings, tubing, large  
standard shapes, or small ir-  
regular and convenience. Few  
shops working with metal can  
afford to be without the most  
versatile of all saws.



Mitre cutting is simple and  
accurate with the MARVEL  
Series 8 band saw. No change  
in position of work. Simply  
set the saw column at any  
required angle up to 45° either  
right or left of vertical. Do  
not confuse with any other  
"hand saw" like the Nor-8  
MARVEL.

**Complete Range of  
Metal Sawing Machines**  
Being the largest exclusive manu-  
facturer of metal sawing machines  
and blades, both hack saw and  
band saw type, we have the cor-  
rect answer to your cut-off prob-  
lems. Each MARVEL model has a  
distinct application, so write us  
and we will send our catalog, price  
and recommendation for the saw  
to fill your requirements most  
efficiently. MARVEL sawing engi-  
neers are also available to discuss  
and analyze your cut-off work.  
(Without obligation of course)

**ARMSTRONG-BLUM MFG. CO.**  
5700 W. Bloomingdale Ave., Chicago 39, Illinois, U. S. A.



## NEWS OF INDUSTRY

### British Physicist Asks Machine Tool Industry To Assume Leadership

London

... Addressing a national meet-  
ing of members of the Engineering  
Industries Assn. here recently, Sir  
Frank Smith, British physicist,  
called on the machine tool industry  
to lead the way to continued indus-  
trial leadership. According to his  
statement, in 1937 British machin-  
ery exports amounted to \$200 mil-  
lion, and imports amounted to \$96  
million, leaving a favorable balance  
of \$104. The item machinery em-  
braced many kinds of machines, in-  
cluding electrical, machine tools,  
ploughs, dairy machinery, cranes  
and many other types.

Analysis of the figures reveals  
that electrical machinery including  
generators, motors, and converters,  
were exported to the extent of \$30  
million worth, and imports of cor-  
responding goods amounted to \$2  
million only, leaving a favorable  
balance on electrical machinery of  
\$28 million. On other electrical  
goods there was a favorable balance  
of \$36 million, making a credit bal-  
ance of \$64 million in all for the  
electrical industry.

Sir Frank continued, "I probe  
further into the Board of Trade fig-  
ures for 1937 and isolate those re-  
lating to machine tools. What the  
home consumption was in 1937 I  
do not know, but I find that our ex-  
ports amounted to less than \$8 mil-  
lion, while our imports amounted  
to over \$24 million, leaving a debit  
balance of over \$16 million. Surely  
this is very unsatisfactory. I ask  
myself if the industry still posses-  
ses the spirit animating Maudslay,  
Whitworth, Nasmyth and others?  
Are we looking ahead? Do we vi-  
sualize the needs of other industries  
for machine tools? More, do we  
create needs as we ought to?"

"First, the machine tool indus-  
try is a key industry and it is its  
duty to supply better and still bet-  
ter machines for the numerous  
other industries of this country.  
These other industries, whether  
they make table glass or boots and  
shoes do not always know what they  
need and what is possible. It is  
for the machine tool industry to  
visualize how table glass and boots  
and shoes can be made better and  
cheaper than before and to suggest  
and provide the machinery.

"In future many of the goods

# BRONZE BOLTS

## STAND THE STRAIN

### Suspend 3 Miles of Drill Pipe

In modern oil wells the draw works are often required to lower and hoist more than 15,000 feet of drill pipe. Think of it! 3 miles of pipe weighing 30 pounds per foot!

Brakes on the draw works are constantly in use sustaining the entire load. For this rugged service Raybestos-Manhattan, Inc., have perfected a brake block and fastening device which depends upon Harper Bronze Bolts to withstand the shearing force of this tremendous weight.

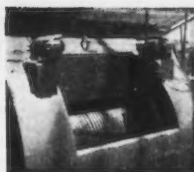
Harper Everlasting fastenings made from high strength non-ferrous and stainless steel alloys are consistently specified by engineers to fight damp, rust-producing atmospheres and corrosive chemicals that would soon weaken common steel.

You may have a fastening problem in your industry. Harper's engineering service can advise the type of fastening best suited to do the job. Call on them to help you.

#### THE H. M. HARPER COMPANY

2607 Fletcher Street, Chicago 18, Illinois

Branch Offices: New York City, Philadelphia,  
Los Angeles, Milwaukee, Cincinnati, Dallas  
Representatives in Principal Cities



Draw Works on a modern oil well.



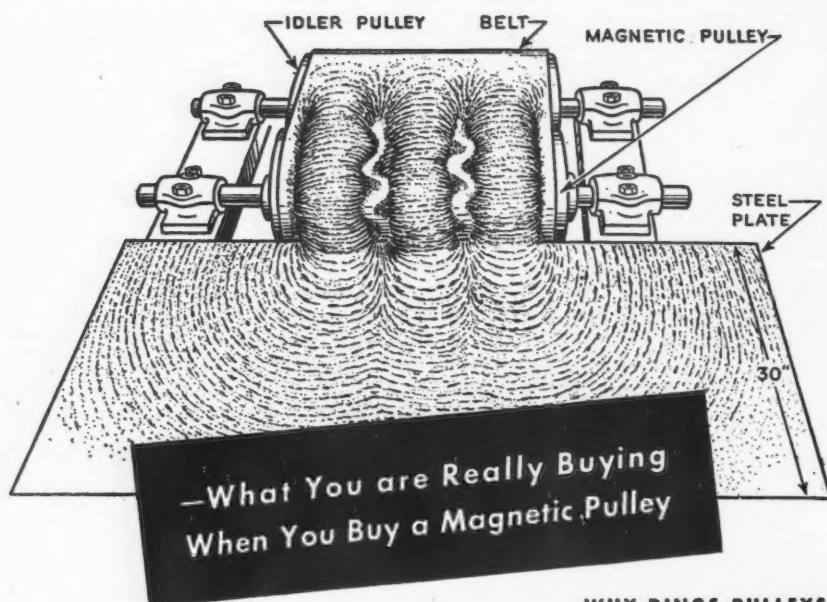
Bronze bolts hold Raybestos-Manhattan blocks securely. May be loosened easily for installation of new blocks.

**HARPER**  
*Everlasting Fastenings*  
*Chicago*

MORE THAN 4850 TYPES OF EVERLASTING FASTENINGS IN BRASS, NAVAL BRONZE, SILICON BRONZE, MONEL, STAINLESS



# "Picture" of MAGNETISM



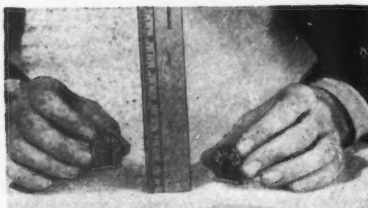
The above illustration was made from a photograph of the pattern formed by iron filings introduced into the magnetic field surrounding a Dings High Intensity Magnetic Pulley. Note that the filings are influenced by the powerful magnetic lines of force at a distance of 30" from the pulley! You want the most powerful magnetic field and greatest iron-removing ability you can get for your magnetic separator dollar. Dings delivers you the maximum on this score by means of bronze coil covers, air-cooling and correct proportioning of steel and windings. For maximum separating power, select Dings. CATALOG 260 on request.

DINGS MAGNETIC SEPARATOR CO.  
516 East Smith Street  
Milwaukee 7, Wisconsin

"High Intensity"  
**Dings**

"Separation Headquarters since 1899"

## WHY DINGS PULLEYS ARE MORE POWERFUL



### BRONZE COIL COVERS

Make This Test! Across one horseshoe magnet place a steel keeper bar—nothing across the poles of the other. Lower the magnets slowly toward paper clips on the table. When the "unkeepered" magnet is within about an inch of the table it snaps up the clip. The magnet with the keeper doesn't pick up its clip until within about ¼ inch because the steel keeper "short-circuits" the lines of force and reduces the intensity and depth of the magnetic field. That's why Dings uses bronze coil covers on its pulleys instead of steel. Bronze has no effect on the magnetic field.



### AIR COOLED

Heat increases magnet coil resistance. This reduces amperage which in turn decreases magnetic strength. Air cooling dissipates heat generated in the coil thereby providing cooler operation and maximum magnetic strength. (Cooling is accomplished by serrated radial openings and longitudinal openings. Rotation of the pulley plus action of belt create forced air circulation.)

## NEWS OF INDUSTRY

we export must be produced on mass production lines or we cannot compete with other countries which do so produce. Indeed, there must in the future be some bigger industrial units in this country if we are going to compete successfully in many markets. We must be able to pay good wages and at the same time produce goods which are comparatively cheap and of excellent quality. Can anyone suggest how this can be done without some reduction of labor by improved machinery, with extensive instrumentation and quantity production by big units?

"Secondly, we should regard all machine tools, British and foreign, as being but stepping stones to something better. I would like to see machine tools sold to a customer who should be told that there would certainly be a better tool available in ten years' time. Many of our tools are out of date. We should always endeavor to produce machines to reduce the number of operations required to the absolute minimum.

"Thirdly, the machine tool should occupy a much more prominent place in education. Mechanisms receive far too little attention in our technical institutions and in our universities, and more should be done to train skilled tool makers and artificers. The machine tool is an instrument of precision; let us train our people to know how to make and develop it and how to use it."

## Labor Situation Seen Easing in Pittsburgh

### Pittsburgh

• • • Interest in apprentice training programs in steel mills here and a sharp reduction in the number of women at work are interesting sidelights on the Pittsburgh labor problem. However, the labor situation here is not considered by observers to be in anything like the serious shape which some other industrial areas report.

As to apprentice training in the steel mills, there are wide differences of opinion. One firm has installed the veteran's "Learn and You Earn" job training program and have several hundred employed under the plan. So far they claim that the plan has been working out very successfully. Another company has only a small

# 1 to 18 wire welds on the same welder!

Wire trays for refrigerators, ovens, kitchen cabinet shelves and many other uses are being produced at the rate of 2,000 per hour at the modern plant of the L. A. Young Spring and Wire Corp., Detroit.

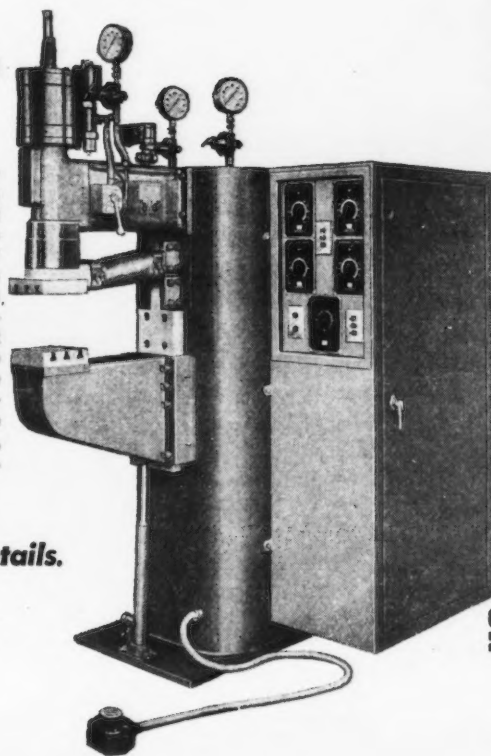
A recent installation of 14 Sciaky 250-KVA projection welders helps maintain this impressive production record. An outstanding characteristic of these machines is *flexibility* . . . the same welder can accommodate many jobs with only a simple change in dies and settings.

If your problem involves joining wire in one or many operations, it will pay you to investigate this rugged, versatile welder. Ask for a SCI AKY application engineer.

## Specially Designed for use in the Wire Industry

This projection welder (type PMCO 1-250-18) is rated 250 KVA at 50% duty cycle. Capacity is from two 1/16" basic steel wires up to and including eighteen, 11-gauge wires. Stepless heat adjustment is provided by both tap switch and phase shift. Complete electronic controls insure balanced circuit, cleaner, faster welds.

**Write for  
Complete Details.**



3 simultaneous spots weld .050" channel to .225" wire frame on these refrigerator trays.



9 cross wires of .092" stock are welded to an .307" trim section in one operation.



Handles are welded to refrigerator tray with two simultaneous spots. (Majority of material is 18-8 stainless steel.)

**SCI AKY BROS.**  
Inc.

4913 W. 67th ST.

CHICAGO 38, ILL.



## what does LOST POWER cost you?

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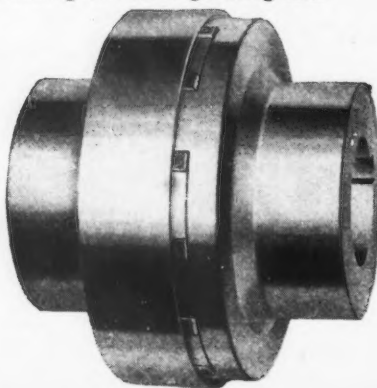
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number of veterans working under the plan and has not had much experience with it. On the other hand, one very large producer is planning to enlarge its regular apprentice training program and prefers not to get involved with the veteran training program because of its legal and union aspects. This company is studying what other steel companies are doing and may change its program later, but at present the regular program is preferred.

The end of the war saw a sharp drop in the number of women employed in the steel industry. One company had 10,000 women employed during the war, but has only 2000 on the payroll now. Another company with 1000 women employed in this area has no women on production jobs at present.

There is little danger, according to observers, of any loss of production of operating time because of the shortage of help in this area, and, while it would be preferable to have a better labor market, mills are not particularly anxious about conditions at the present time.

### Ferrous Materials To Be Imported Duty-Free

Rome

•••The Italian Government has decided to permit the customs free importation of ferrous materials required for immediate transfer to the iron and steel mills provided they are from free and private stocks or from salvaged and dismantled vessels.

Permission is to be granted if the applicants supply the destination of the material to the following organizations as noted:

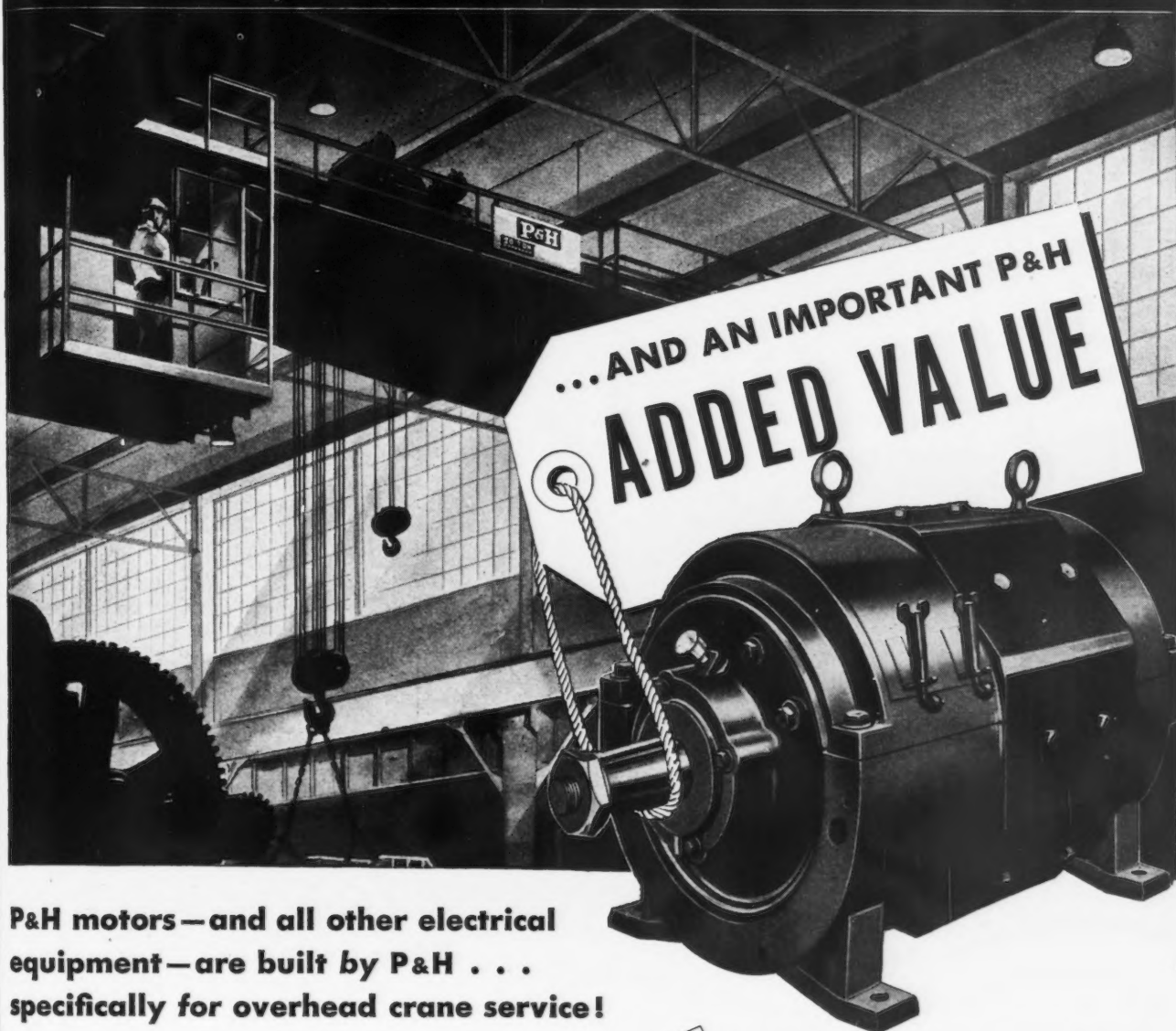
Campsider, Milan, for the north of Italy.

Consorzio Italiano Rottami, Rome, for the central and south.

Campfondat, Milan, all cast iron.

The material in question will be imported without declaring the value, but the duty-free importation of parts recovered in the dismantling of vessels sunk in a port requires prior permission from the Italian Ministry of Finance.

# P&H ELECTRICAL EQUIPMENT . . . HEART OF CRANE DEPENDABILITY



**P&H motors—and all other electrical equipment—are built by P&H . . . specifically for overhead crane service!**

The reason why P&H motors are so outstanding is because they incorporate over 60 years of crane motor building.

These rugged P&H motors are specifically designed and built (not adapted) to fully withstand the severities of crane service—to longer endure the rapid accelerations, frequent reversals and numerous shock loads and with far less maintenance.

Following are but a few of the added values in P&H's type "CR" direct current motors:

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Extra-large diameter shafts with the duplicate ball bearing equipment at both ends.

Welded rolled steel, split-type frames for ease of maintenance.

Spider mounting makes removal of armature winding easy.

Liberal commutator design with full interpole construction, provides perfect commutation under all load conditions.

## P&H

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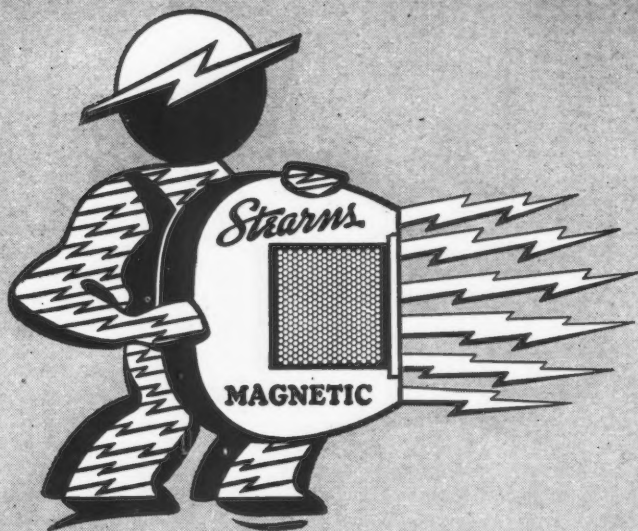


## London Economist

(CONTINUED FROM PAGE 107)

Ruhr's present shortage of trained miners. Conditions in the French camps are, according to the evidence of the French press, uniformly bad. The rate of sickness and death is high. No attempt has been made to separate Nazis and anti-Nazis. So insistent have the complaints of the anti-Nazi prisoners become that a broadcast was recently made, promising a screening of prisoners on the British model, a rectification of injustices done to anti-Nazi prisoners, and even more freedom for them and contact with the French. One of the difficulties in France is, naturally, the general shortage of clothing and food, and it may well be that German prisoners are not much worse off than some French workers, but the standards are very low and clearly the political problem of the prisoners has not been even considered.

THE British record is probably best in the treatment of prisoners of war, but it has varied considerably, and in some of the camps, particularly camps maintained abroad, conditions were sometimes exceptionally bad. It is also true that the British have the best record in the question of releasing prisoners, since a very large part of the Wehrmacht surrendered to the British Army in April last year and hundreds of thousands of the prisoners were released almost immediately to take part in such activities as "Operations Barley-corn," which saved the German harvest. Nevertheless, the relative merits of British treatment cannot be used as an argument for reducing pressure on the government to find a final solution to the problem of German prisoner-of-war labor. The only final equitable solution will be the reinstatement of all prisoners not guilty of war crimes in free civilian life. No other government will take a lead in this matter; yet a lead once given will be difficult to resist, since all the not inconsiderable pressure of German public opinion in the different zones will be mobilized behind it. The present British rate of release is an improvement, but it is neither rapid enough nor big enough to meet the situation fully. If shipping and accommodation in the zones are limiting factors, then



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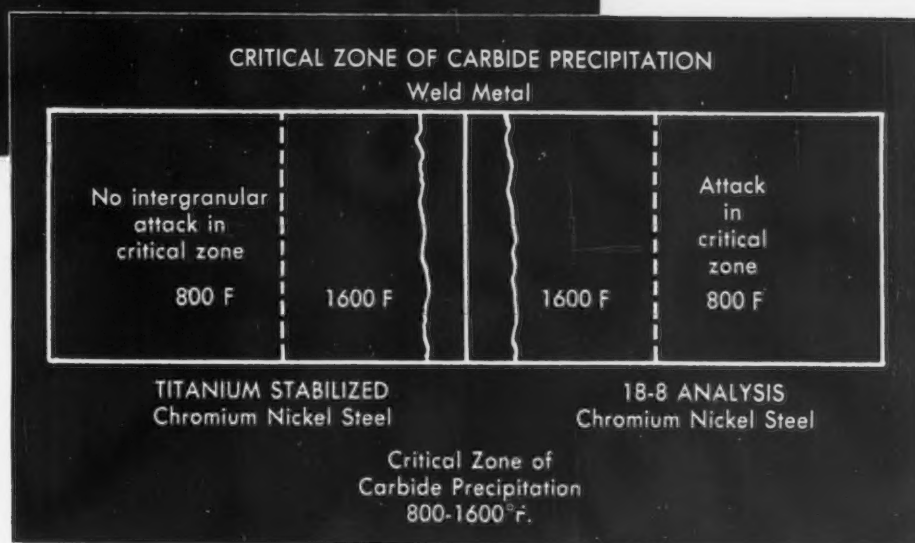
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# HOW

## Titanium Prevents Intergranular Corrosion in Welding Stainless

In the welding of austenitic stainless steels, the retention of carbides in solution is not possible because the resulting heating between 800 and 1600°F. precipitates the carbon present as chromium carbides in an intergranular pattern. In this condition the zones near the welds are predisposed to intergranular corrosion in certain media.

Titanium, the stabilizing element, prevents precipitation of chromium carbide in an intergranular pattern by virtue of the fact that it has greater affinity for carbon than any other element has for carbon, and accordingly, the carbides of titanium are uniformly dispersed thereby preventing intergranular precipitation and corresponding intergranular corrosion.



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# READING HOISTS

surely it should be possible to transform the remaining prisoners into a free labor force under contract.

It will be objected that many of the men are still Nazis, and that re-education must go further before any such step can be risked. But is re-education really possible in the atmosphere of a prison camp? The difficulty about screening is that it is often the time-server and the sycophant who is most easily graded white—particularly if the form of screening is calculated to excite not only Nazi reactions but the ordinary decent reactions of German patriotism. The best education in freedom is surely to experience freedom in a free and ordered society. If the men who have still 2 yr to wait were taken in hand, not by re-education officers, but by trade unions and clubs and the social services in a much freer environment—say, in Ministry of Works and Agriculture hostels—they would probably learn more about democracy in 10 min than from the best hour's lecture on the theory of democracy conducted behind barbed wire.

The evidence suggests that indoctrination—by whatever nation—has had only limited effect. The Russians succeeded before they occupied Germany in forming some cadres among their prisoners for German police and administrative services, and General Paulus "Officers' Union" is believed to be still in existence. But reports that all the 120,000 prisoners dispatched to the Russian zone before the elections were trained Communists seem to have been very exaggerated. The truth is that neither in Russia nor anywhere else are prison bars and forced labor and bad conditions strong arguments for the regime that imposes them.

On all counts, therefore, it is to be hoped that the recent announcement will be only a first step in putting an end completely to the status of prisoner of war. If the French and Belgian governments can be persuaded to walk in step, it should be possible to turn back the tide flowing towards slave labor in Western Europe. The disappearance of slavery 100 yr ago was rightly judged to be a supreme achievement of Western civilization. If there is any meaning today in that much-abused word, it is the first duty of the Western nations to see that the ugly thing does not return.

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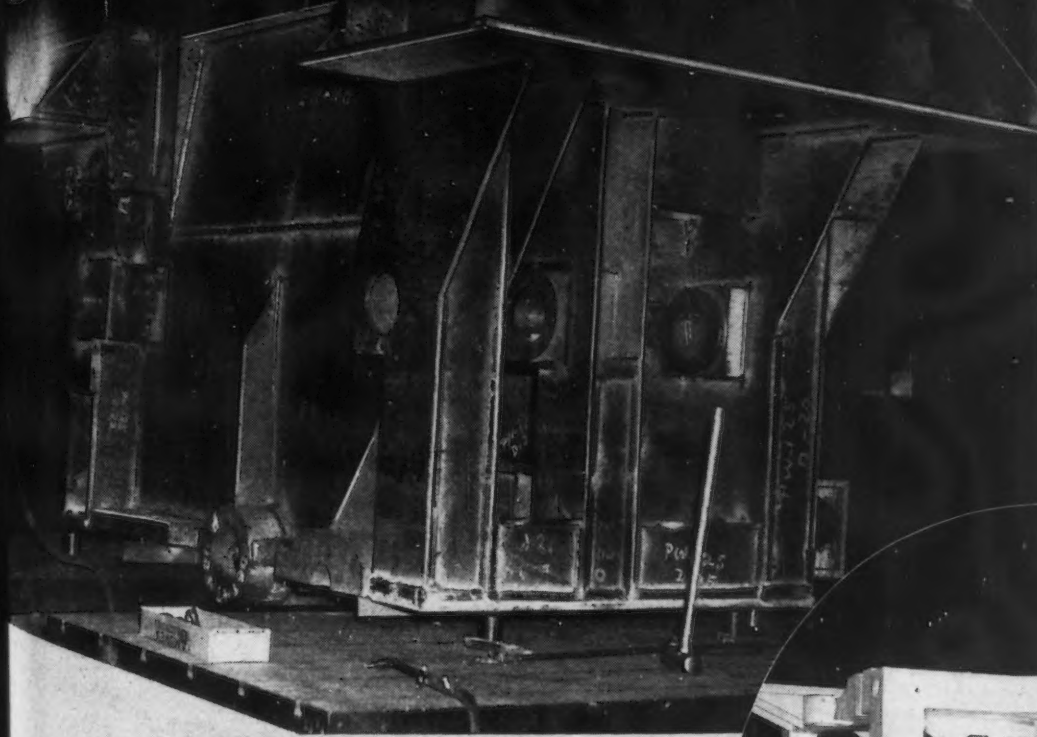
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# WELDING WITH AN EYE TO MACHINING



**Rigid weight and tolerance control**—torch cut bearing holes and knockouts minimize stock to be removed—saves costly machining time in this 13 ton mechanical press bed.

## Milling an internal surface (below)

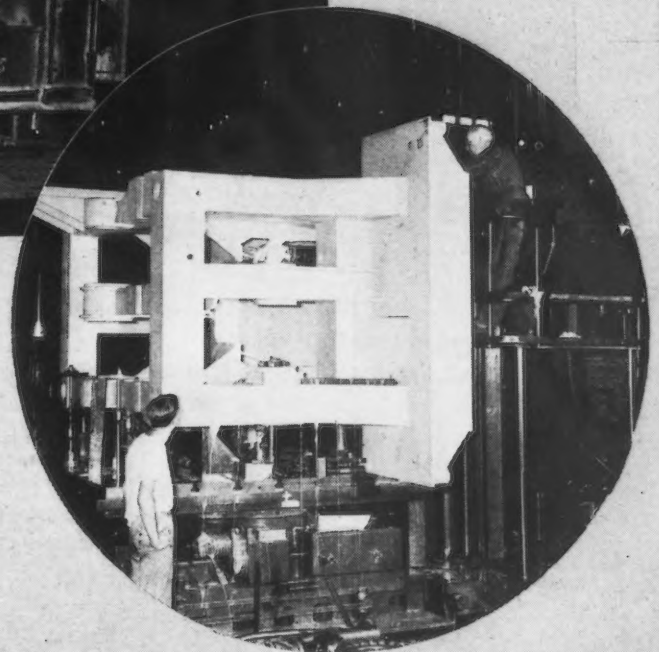
Multi-surface milling and facing is possible with this machine without any major change of setup. The indexing table permits swinging the part through 360 degrees of arc, with but a few minutes time lost.

## DANLY FABRICATES HEAVY PRESS BEDS

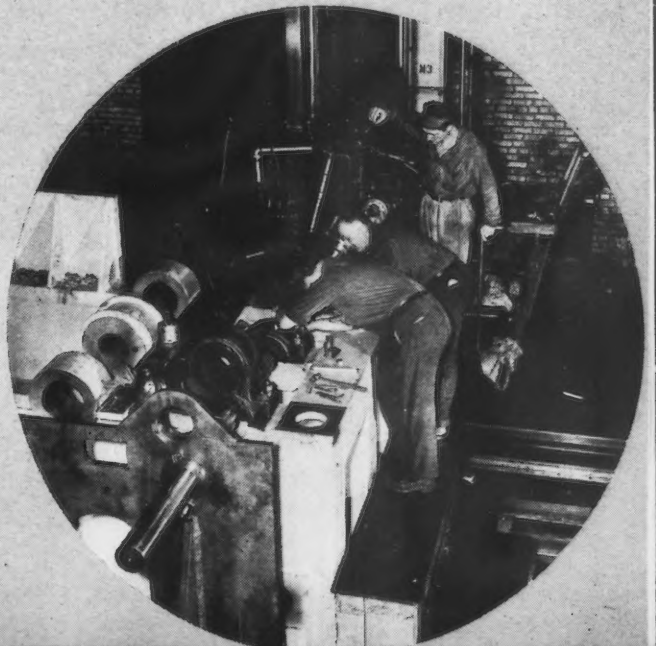
completely equipped welding and machining divisions make Danly a natural for the production of heavy press fabrications and other large machinery parts. Welding facilities include positioners, layout and setup tables, machine torch cutters, handling and normalizing equipment.

Accurate detailing and sub-assembly breakdown minimizes tolerance accumulation—prevents distortion—speeds the job to the machining stage.

Ideal for machining large structures, the floor type boring mills *right* combine precision with great versatility. Equipped with indexing tables for fast setup and multi-surface machining, these boring mills are examples of the type of equipment Danly offers for faster, better production of press components.



**Simple tooling where required** is generally employed by Danly to reduce setup and machining time. This bar-holding fixture expedites the line boring operation of four bearing holes. *Lower right.*



# DANLYWELD

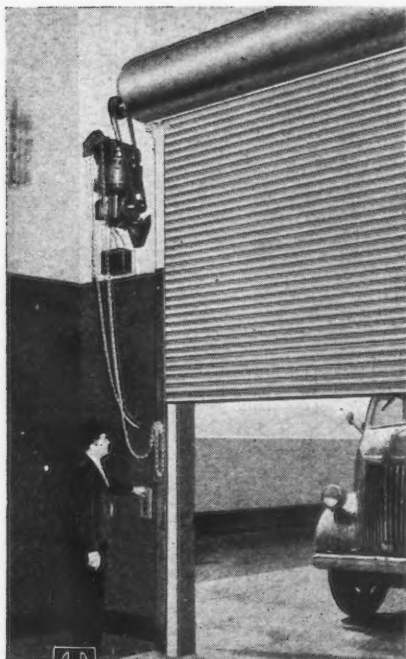
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## NEWS OF INDUSTRY

### Gallup Polls

(CONTINUED FROM PAGE 101)

today and what party he thinks can best handle that particular problem. The results show that the majority who believe that one party can solve that problem better than another choose the Republican Party.

This represents a marked change of political attitude.

When a similar poll was conducted in advance of 1944 presidential election, the Democratic Party came off with the honors—it was the party voted best able to handle the issues then uppermost in the minds of each individual voter.

Detailed figures are presented below on the trends of political sentiment.

The index of congressional voting sentiment is based on the question:

"If you were voting for Congressman today, would you be most likely to vote for the Democrat, the Republican or the candidate of some other party?"

The following table gives the latest poll results in terms of the major party vote, and also the actual percentage polled by the two parties in the 1942 and 1944 congressional elections.

	Major Party Vote	
	Dem. Pct	Rep. Pct
1942 election .....	47½	52½
1944 election .....	52	48
Aug., 1946 .....	45½	54½
Today .....	43	57

The trend of sentiment among the independent voters is given below. Each person polled was asked how he classified himself politically—as a Democrat, a Republican, an independent, or member of some minor party. All who classified themselves as independent voters were asked how they plan to vote in the congressional election Nov. 5, and also what party they would favor if a presidential election were being held.

As already shown, their party preferences for Congress are 41 pct Democratic, 59 pct Republican. As for preferences in a presidential race, the following table gives the recent trend of sentiment among independent voters, with



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## NEWS OF INDUSTRY

their vote in the 1944 and 1940 elections for comparison.

### Major Party Vote

	Dem. Pct	Rep. Pct
1940 election	61	39
1944 election	62	38
Feb., 1946	57	43
July	51	49
Today	38	62

The trend of party strength in the nation in terms of a presidential election follows, with actual election figures given for 1944.

"If a presidential election were being held today, which party would you vote for—the Democratic or Republican?"

### ALL VOTERS

#### Major Party Vote

	Dem. Pct	Rep. Pct
1944 election	54	46
Aug. 1945	58	42
Feb. 1946	55	45
May	52½	47½
July	49	51
Sept.	50	50
Today	47	53

The change in attitude toward the way Mr. Truman has handled his job is reflected in the following:

"Do you approve or disapprove of the way Truman is handling his job as president?"

	Ap- prove Pct	Disap- prove Pct	No opin. Pct
July 1945	87	3	10
Oct.	82	9	9
Nov.	75	14	11
Feb. 1946	63	22	15
Apr.	50	36	14
July	43	45	12
Today	32	53	15

In sounding sentiment on public issues, the poll asked voters, first, "What do you personally regard as the most important issue which should be discussed in the coming November election campaign?" All who named an issue—and of course many different issues were named—were then asked:

"Which party do you think will do a better job of handling the problems you have just mentioned—the Democratic or the Republican?"

The vote of those expressing an opinion:

Democrats can handle problem better..	40
Republicans can handle problem better	60

Prior to the 1944 presidential election a similar poll found that among people expressing a preference for one party or another as best able to handle the issues uppermost in their minds, 55 pct chose the Democratic Party, 45 pct the Republican Party.

## ANOTHER TOUGH JOB "Vapor Degreased"



### BUFFING COMPOUNDS

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There were many questions to consider when the new production line was planned at the Doehler Jarvis Corporation, Batavia, N. Y. Theirs is high speed production of aluminum kitchen-ware. The main question, "Could a standard cleaning process be used to do this job at speeds up to 29 feet per minute?"

Yes! A standard Detrex degreasing process, using PERM-A-CLOR solvent was selected by their engineers and is now being used to remove buffing compounds and to dry the work without spotting. There were, however, special features required within the equipment furnished:

- 1—Banks of sprays were installed, to remove the buffing-compound insolubles before they became "caked-on" by the vapor heat.
- 2—Accessible traps were provided to remove insolubles from the solvent without interrupting production flow.
- 3—Special filters were included in all pump lines—a further aid to operation and maintenance.

Thus, a tough cleaning job is accomplished with PERM-A-CLOR solvent and a standard process tailored for a specific application.

Yours may require only a standard unit of which there is a wide variety available. Whether it's a standard or a special application, a Detrex field representative in your locality is qualified to give an unbiased recommendation, should it be solvent degreasing, alkali, or emulsion. Call him in on your next requirement.



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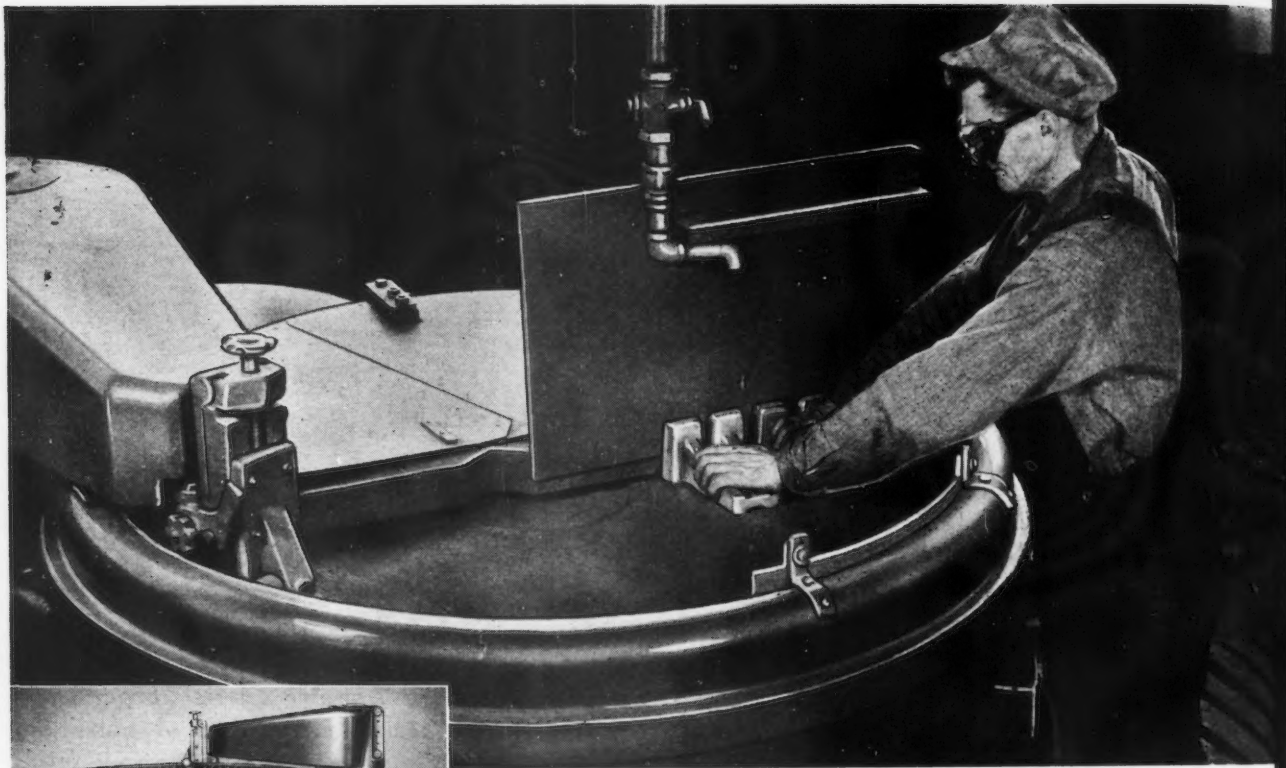
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motor and 53" diameter grinding disc, and it's easy to see why Hanchett 153 is favored by shopmen for the heavy surfacing jobs. Investigate the Hanchett 153 and the savings it offers you. Write for your copy of Bulletin 746-11J today!

And remember—Hanchett makes *all* types of surface, face and disc grinders. For unbiased advice on any grinding problem, consult the experts of the industry. No obligation, of course.



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